INTERNATIONAL TRADE ADMINISTRATION

2015 Top Markets Report
Building Products and Sustainable Construction

A Market Assessment Tool for U.S. Exporters

July 2015

U.S. Department of Commerce | International Trade Administration | **Industry & Analysis (I&A)**

Industry & Analysis' (I&A) staff of industry, trade and economic analysts devise and implement international trade, investment, and export promotion strategies that strengthen the global competitiveness of U.S. industries. These initiatives unlock export, and investment opportunities for U.S. businesses by combining in-depth quantitative and qualitative analysis with ITA's industry relationships.

For more information, visit
www.trade.gov/industry

I&A is part of the International Trade Administration, whose mission is to create prosperity by strengthening the competitiveness of U.S. industry, promoting trade and investment, and ensuring fair trade and compliance with trade laws and agreements.

INTERNATIONAL
TRADE
ADMINISTRATION

Joanne Littlefair served as the lead author of this report. A special thanks goes to **Gary Stanley**, Director of I&A's Office of Materials Industries, for sharing his broad industry expertise and for his ongoing leadership and support. Appreciation also is due to **Renee Hancher** and I&A's Office of Standards and Investment Policy for excellent continuing collaboration.

Table of Contents

This Page Intentionally Left Blank

Executive Summary and Findings

Global construction growth and the trend toward more sustainable construction ("green building") create strong opportunities for U.S. building product exporters. Across international markets, the recognized impact of the built environment on resource usage, environmental conditions, energy and water consumption and emissions links higher performance in buildings to important national priorities. U.S. manufacturers are well positioned with product offerings that can deliver the energy and water efficiency, indoor air quality, and resource conservation benefits that are key goals of green building. U.S. exporters of the seven Sector Group product categories are competitive globally, in both developed and developing economies, and in both traditional and green building markets where higher quality products are in demand. This study details top export market prospects, the key challenges U.S. Sector Group exporters commonly face, and the U.S. Government resources available to exporters to pursue markets expected to hold the greatest opportunity for Sector Group exporters through 2017.

Global construction output is expected to grow in the range of 70 percent from 2014-2020, creating a $12 trillion[i] marketplace worldwide by the end of this timeframe. Although not easily quantifiable, the trend toward increased green building as a component of construction is well established and is propelled by both market forces and government policies. This trend is not limited to specific regions of the world or to specific levels of market development[ii].

The Sector Group: Select Building Product Subsectors

U.S. industries across the manufacturing landscape are making important contributions to the sustainability of the built environment. This study is limited to considering seven categories of building products suited to respond to needs in construction markets that increasingly embrace green building. This Sector Group includes heating, ventilation, air conditioning and refrigeration (HVACR), lighting, plumbing products, insulation, wood products, doors and windows, and glass.

While far from exhaustive, this select Sector Group listing enables a focus on product categories that apply to all types of building construction and have the capability to deliver the specific types of performance gains within the built environment that are targets in green building.

To be clear, ITA is not defining these product categories as "green." Nor is ITA attempting to identify only opportunities associated with sustainable construction. Solely for the purpose of this study, ITA seeks to identify international markets with the greatest overall opportunity for U.S. Sector Group product exports, in which green building-specific developments and trends may create heightened opportunity for U.S. exporters.

In 2013, the seven product categories in the Sector Group formed a $37 billion U.S. export portfolio; it is projected to grow to $46 billion by 2017. With the exception of the glass subsector, which shows a slight projected downturn, the trend shows steady export growth across the seven target subsectors.

Increased global interest in green building also creates enormous opportunity for U.S. suppliers of architecture, design, and other services. These service sectors may be the focus of subsequent ITA Top Markets studies. In addition, the *ITA Renewable Energy Top Markets Study addresses* export market

Figure 1: Projected Top Markets for Building Products and Sustainable Construction Exports (2015-2017)

1. Canada	11. Brazil	21. Taiwan
2. Mexico	12. Singapore	22. Turkey
3. China	13. Venezuela	23. Belgium
4. Japan	14. India	24. Indonesia
5. Australia	15. United Arab Emirates	25. Thailand
6. Saudi Arabia	16. Russia	26. Netherlands
7. Germany	17. Colombia	27. Italy
8. Hong Kong	18. France	28. Bahamas
9. Korea	19. Vietnam	29. Peru
10. United Kingdom	20. Chile	30. South Africa

Note: Sectors included in the analysis include: HVACR, Lighting, Plumbing, Wood, Insulation, Doors & Windows and Glass.

Figure 2: Projected Exports by Sector

Subsector	Exports 2013 (Actual)	Exports 2017 (*Projected*[1])
HVACR	$ 20,069,673,683	$ 26,096,263,924
Wood	$ 9,186,895,373	$ 11,263,843,052
Lighting	$ 3,046,188,243	$ 3,665,521,208
Plumbing	$ 1,476,597,200	$ 1,599,416,680
Insulation	$ 1,040,180,241	$ 1,310,471,225
Glass	$ 1,105,910,659	$ 1,051,068,961
Doors & Windows	$ 789,898,810	$ 975,097,585
Total:	**$ 36,715,344,209**	**$ 45,961,682,635**

prospects for renewable energy technologies, another sector often associated with sustainable construction.

Sector Group Export Market Characteristics and 2017 Rankings

There is a dense concentration of export destinations for U.S. Sector Group exports. For the combined group, the top five export markets account for nearly two-thirds of exports, and the top ten markets absorb nearly three-quarters of total exports. It is no surprise that leading export markets are those with the most significant amounts of overall construction activity. Building products go where the most construction occurs and where demand needs to be satisfied in part through imports. This, too, is a dense field of countries. Globally, the top ten markets by amount of construction activity represented nearly 60 percent of global construction activity in 2012. This is projected to increase to nearly 65 percent of global construction activity clustered in the top ten markets in 2017[iii].

Four markets – Canada, Mexico, China, and Japan – historically have been the leading export markets for the Sector Group and together have claimed more than half of total exports. These markets are expected to maintain their ranks through 2017, when they are expected to account for 61 percent of the Sector Group export portfolio.

Figure 1 provides the 2017 *Top Markets* ranking of export markets looking at the Sector Group of building products as a combined whole. It provides a broad sense of which international markets hold the greatest potential for U.S. Sector Group exporters. However, it is important to note that the specific 2017 export market rankings and country-specific prospects differ for each of the seven subsectors within the Sector Group. This is discussed below and elaborated more fully in the country Case Studies.

Subsector Specific Market Rankings

While the ranking in Figure 1 provides basic parameters on markets holding the greatest promise for Sector Group building products overall, the most meaningful assessment of 2017 export market prospects relies on an individual analysis of each of the seven subsectors. This acknowledges that all seven of the building product subsectors share:

- A diverse exporter base comprised of a small number of large companies and a broad base of small and medium-sized enterprises (SME);
- High density of export destinations, with the majority of each subsector's exports being shipped to the top five export markets;
- Sensitivity to tariffs, due to product categories in which global competition is fierce and sales margins are slim;
- Standards and conformity assessment requirements as the most significant non-tariff barriers identified by industry;
- Increased market opportunity with increased green retrofit or new green building as a component of the overall construction environment.

Beyond these commonalities, each of the seven subsectors differs in its individual country rankings and market prospects for 2017, at times considerably. This section provides *Top Markets* 2017 leading country rankings for each of the seven subsectors, together with a summary of trends and key market challenges. The subsequent section provides more detail on the challenges most commonly experienced by these U.S. exporters, and the wide range of U.S. GOVERNMENT tools that can be brought to bear to improve export market access conditions.

The seven subsectors have in common export expansion opportunities that may be addressed through similar approaches in trade promotion, trade facilitation, and trade policy. At the same time, there

are cases in which a particular subsector faces its own market-specific and product-specific types of challenges that merit individual consideration.

Figure 3: HVACR Projected 2017 Exports: $26.1 billion		
	Top 10 Export Markets 2017	Est. % of Total
1	Canada	25.4%
2	Mexico	20.91%
3	Australia	4.51%
4	China	4.23%
5	Russia	4.04%
6	Germany	2.81%
7	Brazil	2.18%
8	UK	2.11%
9	Korea	2.09%
10	Saudi Arabia	1.98%
	Top Ten Total:	**70%**

U.S. HVACR exports:

- Currently exporting to 230 markets
- World HVACR import market (non-U.S.)[iv]: $175 billion
- World import market growth: 3.71% CAGR 2010-2013
- Growth of U.S. exports[v]: 5.2% CAGR 2010-2013

Key market access challenges:

- Tariffs
- Regulations
- Standards and conformity assessment
- Access to market intelligence, trade promotion opportunity information
- Information on and access to trade finance

Across global markets, impacts on market access for HVACR exporters commonly result from new or modified regulations associated with increasing energy efficiency and mitigating the impacts of climate change. In the realm of energy efficiency, regulations are often in the form of minimum energy performance (MEP) standards and product labelling requirements, among others. With regard to climate change mitigation, the role of refrigerants has been a common focal area. References may reflect aspects such as the ozone depleting potential (ODP), global warming potential (GWP) or life cycle climate performance (LCCP) assessments of regulated products.

Figure 4: Lighting Projected 2017 Exports: $3.7 billion		
	Top 10 Export Markets 2017	Est. % of Total
1	Canada	38.59%
2	Mexico	23.36%
3	Germany	2.77%
4	China	2.74%
5	Russia	2.39%
6	Japan	2.32%
7	Netherlands	2.00%
8	Australia	1.77%
9	Korea	1.70%
10	Saudi Arabia	1.43%
	Top Ten Total:	**79%**

U.S. lighting exports:

- Currently exporting to 213 markets
- World lighting import market (non-U.S.): $42 billion
- World import market growth: 2.99% CAGR 2010-2013
- Growth of U.S. exports: 4.4% CAGR 2010-2013

Key market access challenges:

- Tariffs
- Regulations
- Standards and conformity assessment
- Access to market intelligence, trade promotion opportunity information
- Information on and access to trade finance

Lighting is well recognized for its ability to deliver immediate increases in building energy performance in both retrofit and new construction. It is considered a "low hanging fruit" of areas to tackle to achieve a greener building. Innovative solid-state lighting products, including light emitting diode (LED) technologies and others, are reducing costs as they increase performance.

There also is a trend recognizing the non-visual, biodynamic attributes lighting may deliver in terms of different spectrums and intensities of light impacting well-being, productivity, and overall comfort. This suggests opportunity for a wide range of higher-technology lighting products in schools, healthcare facilities, senior housing and other types of elder care facilities, offices, and sports facilities. Biodynamic lighting has been a focus of applications particularly suited to the elderly, based on evidence that light may play a factor in sleep regulation and other biological functions.

Figure 5: Plumbing Projected 2017 Exports: $1 billion		
	Top 10 Export Markets 2017	Est. % of Total
1	Mexico	38.59%
2	Canada	23.36%
3	Saudi Arabia	2.77%
4	Peru	2.74%
5	Chile	2.39%
6	Australia	2.32%
7	Taiwan	2.00%
8	China	1.77%
9	UK	1.70%
10	UAE	1.43%
Top Ten Total:		85%

U.S. plumbing exports:

- Currently exporting to 198 markets
- World plumbing import market (non-U.S.): $26 billion
- World import market growth: 0.72% CAGR 2010-2013
- Growth of U.S. exports: 1.55% CAGR 2010-2013

Key market access challenges:

- Tariffs
- Regulations, particularly water conservation-related
- Standards and conformity assessment
- Counterfeit issues – brand and performance claims
- Access to market intelligence, trade promotion opportunity information
- Information on and access to trade finance

Plumbing products fall into two main categories: rough materials, for use in walls, floors, and other piping-related applications; and finish materials, which come into contact with people (sinks, faucets, toilets, bathtubs, shower heads, etc.). The United States is just one of three countries using the imperial system; the others are Liberia and Burma. Any U.S. manufacturers of rough materials for plumbing seeking to export their products must factor this into the equation. For countries utilizing the metric system, it is unrealistic to envision selling rough materials for use in projects designed to metric sizes.

In terms of finish materials, U.S. water conservation standards are not as stringent as those of some of the more water-scarce countries internationally. This is another factor U.S. exporters must closely examine to understand their products' competitiveness.

While plumbing infrastructure is well established in developed markets, developing countries with an interest in improving their plumbing infrastructure present an interesting opportunity. Collaboration between U.S.-based plumbing code developers and relevant authorities in developing countries can create an opportunity for resource and information sharing to develop local solutions referencing international best practices and standards. Ultimately, this approach, leading to greater certainty about market access requirements, creates opportunity for U.S. plumbing product exporters.

The plumbing sector also has seen major U.S companies establishing manufacturing facilities overseas to serve target markets from more proximate or lower-cost locations.

Figure 6: Wood Product Projected 2017 Exports: $11.3 billion		
	Top 10 Export Markets 2017	Est. % of Total
1	China	31.38%
2	Canada	29.58%
3	Japan	9.41%
4	Mexico	7.69%
5	Vietnam	2.59%
6	Korea	1.46%
7	Australia	1.41%
8	Turkey	1.24%
9	Bahamas	1.15%
10	UK	1.09%
Top Ten Total:		**87%**

U.S. wood product exports:

- Currently exporting to 217 markets
- World wood products import market (non-U.S.): $99.7 billion
- World import market growth: 4.05% CAGR 2010-2013
- Growth of U.S. exports: 7.73% CAGR 2010-2013

Key market access challenges:

- Tariffs, particularly escalating tariffs
- Regulations
- Standards and conformity assessment
- Access to market intelligence, trade promotion opportunity information
- Information on and access to trade finance

Legality Requirement Trend The global effort to combat illegal logging has driven a trend in the woods product trade in which assurances are sought that timber utilized in production has been harvested legally. The European Union, Australia, and the United States have put in place regulatory requirements geared to combating trade in illegally harvested wood products. The EU Timber Regulation and Australia's Illegal Logging Prohibition Act place the burden on their importers to conduct risk assessments of supplies. The

United States has been assessed at having an extremely low risk of illegally harvested timber[vi].

Wood's Green Attributes There is solid opportunity to tout wood's benefits as they relate specifically to sustainable construction, to boost market acceptance. These include wood products' environmental and performance attributes such as wood's status as a renewable resource, wood's ability to store carbon dioxide, its merits measured by life-cycle assessment (LCA) methods, energy efficiency, and adaptability, or the reusability of wood building components and relative ease of wood-based building deconstruction.

Figure 7:
Insulation Projected 2017 Exports: $1.3 billion

	Top 10 Export Markets 2017	Est. % of Total
1	Canada	32.8%
2	Mexico	22.1%
3	UK	5.9%
4	Brazil	4.8%
5	China	4.2%
6	Australia	3.6%
7	Germany	3.2%
8	Japan	2.7%
9	Korea	2.2%
10	Russia	1.4%
	Top Ten Total:	**83%**

U.S. insulation exports:

- Currently exporting to 188 markets
- World insulation import market (non-U.S.): $6.5 billion
- World import market growth: 3.55% CAGR 2010-2013
- Growth of U.S. exports: 7.11% CAGR 2010-2013

Key market access challenges:

- Tariffs
- Regulations
- Standards and conformity assessment
- Access to market intelligence, trade promotion opportunity information, information on and trade finance

Insulation plays an important role in reducing the heating and cooling requirements in all types of buildings. The ability to drive greater energy efficiency and greater comfort in indoor environments makes insulation a natural focal element in green building.

Figure 8:
Doors and Windows Projected 2017 Exports: $975 million

	Top 10 Export Markets 2017	Est. % of Total
1	Canada	59.8%
2	Mexico	8.6%
3	Bahamas	4.4%
4	Hong Kong	2.3%
5	China	2.0%
6	Japan	1.8%
7	UAE	1.7%
8	Germany	1.2%
9	Korea	1.1%
10	Qatar	1.0%

U.S. doors and windows exports:

- Currently exporting to 199 markets
- World doors and windows import market (non-U.S.): $11.4 billion
- World import market growth: 4.1% CAGR 2010-2013
- Growth of U.S. exports: 3.77% CAGR 2010-2013

Key market access challenges:

- Tariffs
- Regulations
- Standards and conformity assessment
- Access to market intelligence, trade promotion opportunity information, information on and trade finance

Doors and windows contribute to energy efficiency in the built environment by preventing heat from escaping the building, reducing heating requirements, blocking heat from sunlight, lowering cooling requirements, and enabling visible light to enter, reducing lighting requirements. U.S. manufacturers provide products that are high performing in energy efficiency and are known for durability and low maintenance requirements.

Figure 9:
Glass Projected 2017 Exports: $1.1 billion

	Top 10 Export Markets 2017	Est. % of Total
1	Hong Kong	51%
2	Canada	36%
3	Mexico	4.9%
4	Japan	1.7%
5	Brazil	1.1%
6	Colombia	0.9%
7	Ecuador	0.7%
8	Germany	0.5%
9	Turkey	0.4%
10	Qatar	0.4%
	Top Ten Total:	**98%**

U.S. glass exports:
- Currently exporting to 165 markets
- World glass import market (non-U.S.): $11.3 billion
- World import market growth: 3.41% CAGR 2010-2013
- Growth of U.S. exports: 3.75% CAGR 2010-2013

Key market access challenges:
- Tariffs
- Regulations
- Standards and conformity assessment
- Access to market intelligence, trade promotion opportunity information, information on and trade finance

A trend in the glass sector has seen major U.S glass companies establishing manufacturing facilities overseas, to serve target markets from more proximate or lower-cost locations.

Market Challenges and U.S. Government Resources Available to U.S. Exporters

ITA is well positioned to assist U.S. companies via the trade promotion, trade policy, trade facilitation, and overall market expansion approaches described below.

Market Challenge: Tariffs

A number of the leading 2017 export markets are countries with which the United States enjoys a free trade agreement (FTA). In other markets, tariffs remain a key barrier for all subsector export categories. Tariffs in the subsectors often are escalating, meaning that tariff burdens increase as the technical sophistication of, or level of processing inherent in, the product increases.

U.S. Government Resources
- ITA is available to help companies understand the tariffs their products will be subject to in international markets.
- The U.S. Government pursues maximum and shortest phase-in tariff reductions, ideally leading to zero tariffs, for Sector Group products in bilateral and multilateral trade agreements. Active opportunities exist in the Trans-Pacific Partnership (TPP), Trans-Atlantic Trade and Investment Partnership (TTIP) and the WTO Environmental Goods Agreement (EGA), currently under negotiation with trade partners.

Market Challenge: Trade Promotion in Highly Competitive Global Markets

U.S. Sector Group exporters compete with world-leading companies and low-cost producers in every international market. Traditional trade promotion approaches can be successfully employed in the sector's leading markets to put U.S. exporters and their products in direct contact with potential buyers. These approaches include domestic and international trade shows, overseas trade missions and reverse trade missions bringing international buyers to the United States, and direct matchmaking programs that feature tailored market research and buyer introductions, among other services.

U.S. Government Resources
- *Subsector-specific trade events are typically most effective*. Due to the fierce competition in these product categories, it is essential for U.S. exporters to be able to directly engage buyers and feature product performance characteristics and technical requirements in a detailed manner.
- *"Green" multi-industry trade events also can be ideal venues*, where U.S. product specifications and performance support in-country green requirements or preferences, or, as in the case of wood products, promotion of less-understood green attributes is an important element of global market expansion.
- *Public-private partnership in market development cooperation has proved to be a highly successful*

ITA Global Design & Construction Team

The Global Design & Construction Team centralizes industry expertise, market research, and best practices to better assist U.S. manufacturers of construction and building products, design firms and service providers with international expansion. The Team is comprised of trade specialists drawn from ITA's 100 U.S. and 70 overseas locations.
For more information, visit: www.export.gov/industry/construction

To obtain trade leads:
https://www.linkedin.com/groups?home=&gid=4979345&trk=anet_ug_hm&goback=%2Egna_4979345

form of trade promotion for the sector. Under this model, U.S. exporters directly engage in promotion of products to targeted audiences in markets, while, as needed, U.S. Government agencies bolster the promotion work with relevant Government-to-Government dialog. Public-private cooperative models have been proven to deliver the highest return on investment, in terms of U.S. exports generated per dollar of federal investment.

- *Providing information to U.S. exporters on financing tools* available to facilitate deal closure can be an important element of trade promotion work.

Figure 10: Public Private Partnerships

ITA Market Development Cooperator Program (MDCP) Awards
MDCP Awards: Industry Groups Can Obtain Up to $300,000 for Foreign Market Development Projects
Each year, ITA makes several financial assistance awards to non-profit industry groups to pursue projects that help U.S. firms export and create jobs. Please visit www.trade.gov/MDCP for complete information.

ITA currently has four Market Development Cooperator Programs (MDCP) public-private partnerships in the building products sector.

- U.S.-China Build (China)
- Standards and Codes for Sustainable Construction (Gulf Region)
- Water for Indonesia Now (Plumbing)
- We Build Green Cities (China, Mexico, Qatar)

USDA MAP Program
The U.S. Department of Agriculture (USDA) operates the largest public-private partnership in support of U.S. wood product exports under its Market Access Program (MAP). Please visit http://www.fas.usda.gov/programs/market-access-program-map for additional information.

Market Challenge: Standards and Conformity Assessment

U.S. industry reports standards and conformity assessment issues (certification, inspection, sampling, testing, and accreditation) requirements as the most significant non-tariff barriers to trade in the sector. These types of barriers, with inherent cost impacts, are burdensome for all exporters and have disproportionate impact on SMEs.

U.S. Government Resources

1) Guidance for U.S. Exporters
   - *Standards Attachés at U.S. embassies*. ITA has standards attachés posted to U.S. embassies in Beijing, Brussels, Mexico City, and Sao Paulo that can assist exporters with standards market access issues and provide early notice of construction and public works activities relevant to the building sector.
   - *Market Intelligence.* As a key component of export market intelligence reports, ITA can provide U.S. exporters with access to subsector-specific information on standards (mandatory and voluntary) and conformity assessment requirements so companies can best determine paths to compliance and reflect compliance in product marketing.
   - *Action to resolve existing barriers.* If a U.S. exporter reports a market access barrier specific to standards and conformity assessment requirements, ITA is positioned to take the following actions:
     - Determine whether the situation constitutes a violation of the World Trade Organization (WTO) Technical Barriers to Trade (TBT) Agreement;
     - If a violation is found, ITA will develop as a first step an approach to relevant in-country authorities toward resolution. Subsequent steps are determined situationally;
     - If no violation is found, ITA encourages the use of a broad range of mechanisms to facilitate the acceptance of conformity in accordance with the principles of the WTO TBT Agreement.
   - *U.S. firms are encouraged to engage in international standardization activities.* Participants actively engaged in the standards development process have the greatest impact on the shape of a standard, and many developing countries with limited resources rely on international standards rather than creating their own.
   - There is significant work under way on sustainability and life cycle issues in standardization organizations such as the International Organization for Standardization (ISO).
     - ITA works with the American National Standards Institute to provide early warning about emerging standards issues and encourage companies to become involved as a way to pre-empt possible market access issues.
     - U.S. entities can sign up for notifications from National Institute of Standards and

Technology (NIST) on standards development in target markets.

2) Building Capacity in Target Markets
   - *Advocacy for the benefits of international standards use*. The consistent U.S. Government message is that standards for sustainable construction facilitate trade and create certainty in international markets. They ensure that buyers have access to efficient solutions reflecting best consensus expertise, and enable product and service providers to offer cutting-edge solutions.
   - To build capacity in target markets, the U.S. Government facilitates *standards-related technical and policymaking information and best practice exchange to encourage business-friendly regulatory environments.* The U.S. Government seeks to strengthen good regulatory practices that facilitate trade and investment. Examples include encouraging:
     - transparency about new and revised regulatory requirements;
     - technical dialogues and exchanges to introduce new materials, technologies and non-traditional building systems;
     - consultations with the private sector as new regulations are being developed; and
     - clarity about which authorities have leadership responsibility or will implement and enforce regulatory requirements.
   - *Advocacy for use of existing sector-specific international standards*. The U.S. Government seeks to highlight to target market regulators and construction industry players that standards for sustainable construction exist and are available to develop effective solutions to specific local challenges, and that they are not only developed by ISO, international Electrotechnical Commission (IEC) and International Telecommunication Union (ITU). The U.S. Government seeks to create and leverage opportunities for U.S.-based international standards development organizations and U.S. manufacturers to provide information on their solutions.
   - *Building codes may create opportunities.* In addition to ensuring the safety and health of building occupants, building codes increasingly are being utilized as a regulatory tool to increase building performance.
     - International standards referenced in building codes are important mechanisms for facilitating trade in sustainable construction products and services. The U.S. Government seeks to create opportunities for U.S.-based standards and code development organizations to showcase their code approaches and referenced standards.
     - As countries design greener building codes, the U.S. Government also seeks to create opportunities to share information on best practices supporting successful development, implementation, enforcement, and evolution of building codes.

Market Challenge: Intellectual Property Rights (IPR) Protection

U.S. exporters have reported instances in some international markets of counterfeit brand labels on Sector Group products as well as false performance claims on product labels.

U.S. Government Resources

- Information on U.S. Government created public-access tools and services designed to help SMEs protect and enforce their IPR at the ITA-led website http://www.STOPfakes.gov.
- Exporters who need further assistance or who encounter IPR-related problems abroad can contact ITA's Office of Intellectual Property Rights (OIPR) experts for one-on-one advice to develop an IPR strategy to address IPR problems. OIPR can also connect exporters to other U.S. Government agencies and U.S. embassies around the world to pursue a course of action for resolution of problems.
- Basic information on intellectual property tips for the building products and sustainable construction sector include:
  - U.S. companies in the building products and sustainable construction sector should register their trademarks (brand names, logos, product names) in priority markets, monitor foreign markets for counterfeits, and secure their supply chains from counterfeit building materials. Patents, including utility model patents available in some countries, can also be an important tool for maintaining a competitive advantage for

innovative building products. Companies should take steps to protect trade secrets through non-disclosure agreements, securing sensitive information, and other means of maintaining confidentiality.

Market Challenge: Expanding the Green Portion of Construction Markets

For economies in which the U.S. market share is high and where there is a recognized, stable regulatory regime, U.S. Government agencies may seek to focus efforts on helping the target market expand the green segment of its built environment in which U.S. products are highly competitive.

U.S. Government Response Tools

- *Share information and best practices*. U.S. Government agencies seek to share information and best practices in areas proven to expand green building. A range of areas might include, for example:
  - Best practices in workforce development related to closing green construction capacity gaps;
  - Models of innovative public or private financing mechanisms for green building;
  - Information on how countries are using cutting-edge tools such as Building Information Modeling (BIM) as part of a policy framework to expand green building. BIM is a 3D model-based process for planning, design, construction, and operation of buildings.

Country Case Studies

To provide substantive comments on market conditions and best export market prospects on a Sector Group and subsector-specific basis, ITA selected the following markets for Case Studies: Australia, Canada, China, Japan, Mexico, the United Kingdom and the Gulf Region Member States of the Gulf Cooperation Council (GCC). Together, these markets are projected to account for 69 percent of Sector Group exports in 2017. These markets were selected because they represent a variety of market sizes, growth profiles, levels of economic development, and challenges. The Case Studies also enable elaboration of circumstances in which one or more subsectors has significantly more or less favorable prospects than other subsectors in the Sector Group.

Methodology

The Harmonized Tariff System (HTS) does not distinguish "green" products within a product category. For this reason, U.S. Census Bureau data for all products within each subsector was utilized to rank export markets for the subsector as a whole and for all seven subsectors together.

Data sets created in support of the National Export Initiative (NEI) Building Products Sector Strategy form the analytical basis of this study. Under the NEI, ITA established a data concordance of HTS product categories at the 6-digit HTS level. For the seven building product subsectors considered in this study, a total of 194 product categories within the HTS tariff line schedule were utilized. It is ITA's assessment that these trade data groupings reflect a reasonable approach to valuing U.S. exports in the seven subsectors. A complete listing of HTS product categories considered for each of the seven subsectors is found at Attachment 4.

Case Studies

ITA's analysis considered both historic and projected dollar values of U.S. subsector exports. Annual U.S. Census Bureau U.S. Merchandise Trade data for 2010-2013 was utilized for each subsector individually and all subsectors together as a Sector Group, identifying U.S. dollar volumes of U.S. total exports. This analysis informed the selection of seventy-five export markets to be included in the 2017 *Top Markets* Rankings. The seventy-five markets chosen reflect the leading 2013 export markets in terms of value of exports are found in Attachment 1. Together, these seventy-five markets accounted for more than 99 percent of Sector Group exports in 2013.

2017 Top Markets Rankings

Utilizing four years of U.S. Merchandise Trade total exports data for the 2010-2013 period, for all of the 194 HTS product categories, ITA utilized a linear projection to smooth annual growth fluctuations, arriving at a projected 2017 export total for each of the seventy-five export markets. This was done for each of the seven subsectors individually, as well as for the Sector Group as a combined whole. The full rankings for the seventy-five markets, on a Sector Group and subsector-specific basis, are found at Attachment 2 and Attachment 3, respectively.

Figure 11: Overview of Country Case Studies

Rank	Country	Characteristics
#5	**Australia**	Geographically vast, stable, developed market ▪ U.S. products enter duty-free under the U.S.-Australia FTA ▪ Strong commitment to sustainable construction
#1	**Canada**	Large, stable, developed market with high U.S. import market share ▪ The #1 ranked market for 5 of 7 subsectors in 2017 ▪ Long-established private- and public-sector commitment to green building ▪ U.S. products enter duty-free under NAFTA ▪ Common language facilitates business ties
#3	**China**	Large, developing market with room for U.S. exporters to increase market share ▪ Tariffs play a role in U.S. competitiveness for the Sector Group ▪ Increasing green building is a government priority in support of meeting climate change mitigation obligations. A range of policy approaches are drivers in the market. ▪ Strong after-sales support is a critical factor
#6 #15 #41 #47 #46 #68	***Gulf Region*** **Saudi Arabia** **UAE** **Qatar** **Kuwait** **Oman** **Bahrain**	Dynamic, high-growth region with double-digit U.S. Sector Group exports during 2010-2013 ▪ Saudi Arabia is a 2017 Top 10 market for HVACR, Lighting, and Plumbing ▪ United Arab Emirates is a 2017 Top 10 market for Plumbing and Doors and Windows ▪ The United States has free trade agreements with Oman and Bahrain ▪ In the other GCC markets a common 5% tariff applies
#4	**Japan**	Large, stable, developed market with room for U.S. exporters to increase market share ▪ Wood products have strong performance and drive Japan's #4 ranking for 2017 export market prospects ▪ Domestic Japanese manufacturers are world leaders in Sector Group building product categories and the bar is set high for imported products. ▪ Tariffs play a role in U.S. competitiveness for the Sector Group
#2	**Mexico**	Large, developing market with high U.S. import market share ▪ The #1 market for Plumbing, #2 for HVACR, Lighting, Insulation and Doors and Windows, #3 for Glass and #4 for Wood in 2017 ▪ Emergent interest in green building gaining momentum ▪ U.S. products enter duty-free under NAFTA

Country Case Studies

The following pages include country case studies that summarize export opportunities in selected markets. The overviews outline ITA's analysis of the U.S. export potential in each market and offer recommendations to improve the effectiveness of U.S. Government export activities. The markets represent a range of countries to illustrate a variety of points – and not the top five markets overall.

ITA's recommendations are meant to provide suggestions for export promotion and trade policy efforts specific to these markets. Some activities, which are not mentioned, are effective in all markets. Webinars, market assessment reports, the International Buyers Program, and other trade events reach a wide cross-section of exporters and provide important information to U.S. companies about opportunities overseas and should continue as such.

This Page Intentionally Left Blank

Australia

Australia enjoys a mature green building sector and a construction market growing steadily in global rank. Duty-free status under the U.S.-Australia Free Trade Agreement and a common language provide Sector Group exporters with a strong foundation for growth. For the U.S. Government, dissemination of focused market research, promotion of U.S. building products at subsector specific trade events, and matchmaking and partner vetting are meaningful actions toward increasing Sector Group exports. Strong opportunities exist in new construction and retrofit alike amid stiff competition and Australian import market domination by China.

Overall Rank	HVACR	Insulation	Lighting
5	3	6	8

Doors & Windows	Plumbing	Glass	Wood
11	6	22	7

Australia is set to rise to the position of sixth largest construction market outside the United States by 2017 from its recent (2012) eighth place ranking, if global construction trends continue.[vii] Australia's population of just twenty three million is spread over a vast geographic area, buts its high per capita GDP, above $28,000, indicates a continuing demand capacity for high-quality building products. The country's urbanization rate shows more than 90 percent of the population living in cities, driving the need for more sustainable construction.

The outlook for Australia's construction market is positive, due in part to low interest rates, low unemployment rates, and overall improvement in investor, business and consumer confidence. Residential building supply falls short of demand, suggesting solid growth prospects in that category, and a higher yield on asset prices is drawing renewed interest in office building investment.

Mature Green Building Market

A 2012 industry survey of Australia's construction industry[viii] indicated strong demand for green building across a variety of project types in both new construction and retrofit of existing buildings looking three years forward:

- New commercial building construction – 64 percent of firms reported new green commercial construction planned;
- New institutional buildings (schools, hospitals) – 47 percent of firms reported planned green institutional projects;
- Existing building retrofits – 42 percent of firms reported green retrofit projects planned; and
- Commercial interiors – 32 percent of firms indicated green projects planned.

The Green Star voluntary environmental rating system for design and construction of buildings is well established in Australia, having been launched by the Green Building Council of Australia in 2002. Green Star determines environmental impact by evaluating and establishing credits in nine categories: energy, indoor air quality, water, materials, emissions, management, transport, land use and ecology, and innovation. Green Star ratings are determined at three levels based on a project's overall score, and are relied upon across the industry as a signature measure of projected building performance.

Australian Government Commitment to Green Building

Buildings are an enormous part of Australia's economy, with building construction representing 7-8 percent of gross domestic product (GDP).[ix] The Australian Government recognizes the impact of buildings on the environment, in terms of resource usage and emissions, and seeks to harness the potential of the built environment to contribute to national sustainability objectives. To this end, the Government has taken an approach to greening the construction

Figure 1: Understanding the Policy Approach, Commercial Sector, and Residential Sector

Policy Approach	Commercial Sector	Residential Sector
Minimum Standards	▪ Building Standards (updated 2006, 2010) ▪ Minimum Energy Performance Standards (MEPS) for commercial equipment ▪ 4.5-star Green Lease requirements in Energy Efficiency in Government Operations (EEGO) policy ▪ National Building Framework for more consistent, predictable standard-setting	▪ Building Standards (updated 2003, 2006, 2010) ▪ Minimum Energy Performance Standards (MEPS) for household appliances and equipment ▪ National Building Framework for more consistent, predictable standard-setting
Information Disclosure	▪ Commercial Building Disclosure Program. Most offices over 2,000 square meters must disclose energy performance when leased or sold ▪ Annual Report of EEGO ▪ Energy Efficiency Opportunities Program managed by Department of Energy, Resources and Tourism (DRET) required disclosure of some large commercial owners ▪ Energy Efficiency Information Project (EEIP) – Information on EE possibilities	▪ Living Greener and Your Home materials provide information for households on sustainable options ▪ EE labeling is required for household appliances and equipment ▪ Residential disclosure to disclose household performance at sale ▪ Information on EE possibilities via EEIP and LIEEP programs
Financing/Incentives	▪ Low Carbon Australia and Clean Energy Finance Corporation support EE in commercial buildings ▪ Demonstrated support for co-generation and tri-generation	

sector that acknowledges the need to focus on both new construction, and renovation and retrofit of existing properties.

Energy efficiency has been the focus of policy, with the Government relying on three main approaches: minimum standards, information disclosure requirements, and financing in the way of incentives to demonstrate new technology or to overcome barriers. These policy approaches are relevant to both the commercial and the residential sector, and are summarized in the following chart.

Challenges & Barriers to Sector Exports

U.S. building products enjoy strong brand recognition and a reputation for high quality in Australia. The U.S.-Australia Free Trade Agreement, in force since 2005, has been a boon for Sector Group exporters. Enjoying duty-free status, Sector Group exports have grown rapidly and in 2013 stood at 238 percent of the 2005 level.

During the same period, construction-related U.S. service exports – namely design and construction services – have not experienced the Australian market as equally inviting. Local Australian companies dominate the architectural services market, with international services accounting for only 1 percent-1.5 percent of domestic demand today.

Barriers to building product Sector Group exports to Australia are summarized below. These barriers are applicable to all product subsectors within the Sector Group. The common challenges suggest a focus on subsector specific trade promotion targeted to showcase product performance attributes and buyer matchmaking is essential. At the same time, market intelligence to understand the local environment and potential local partners and distributors can be critical.

Highly competitive market environment

Australia is in close proximity to lower-cost Asian producers of Sector Group products, and has access to global suppliers of the highest-quality building products. While the U.S.- Australia FTA and a common language provide important advantages, U.S. suppliers still must overcome transport costs and deliver on product performance and post-sales service requirements to compete in Australia. To win sales often requires regular direct engagement with buyers to distinguish specific product performance from competitors. To provide needed sales follow-up

Figure 2: U.S. Building Product Exports to Australia (2013)

	Australia Import Market Size (2013)	U.S. Share of Import Market	U.S. Rank as Source of Imports
Sector Group (Total)	$7,490,596,328	12.06%	#2
HVACR	$4,031,029,991	17.38%	#1
Lighting	$960,902,030	5.19%	#3
Wood	$1,596,430,031	6.34%	#5
Plumbing	$527,824,324	5.31%	#4
Insulation	$76,563,925	10.85%	#2
Windows & Doors	$202,343,345	5.5%	#4
Glass	$95,502,682	4.38%	#3

Source: UN Comtrade

support, U.S. exporters are well-served by an in-country presence.

Business customs

The commonality of the English language does not translate to an instantly understandable business environment in Australia. A local presence or strong in-country partner may be needed to navigate the local market and to understand the competitive state of play, available sales channels, applicable regulations and standards, and other fundamental aspects of the Australian market.

Geographic size and diversity

Australia is vast geographically. This creates challenges in terms of establishing a local presence or establishing distributors capable of serving the entire country. It also means that exporters must choose between trade promotion events in different markets. Market information review tailored to specific locations and product types is beneficial.

Regulatory environment

Detailed knowledge of the product standard and conformity assessment process is important to sector exporters. The Building Code of Australia (BCA) requires that products and materials used in building construction comply with a range of Australian standards. Sector Group exporters should carefully review relevant information on standards and conformity assessment requirements.

Opportunities for U.S. Companies

Addressing the above-mentioned types of barriers may help U.S. exporters improve their share of the Australian market. This section provides a review of the current state of play and competitive landscape, suggesting where there may be the greatest room for growth.

For the Sector Group as a whole, the United States is the second largest source of Australia's imports, with a 12 percent import market share. Imports from China dominate, claiming nearly 29 percent of the market. A look at each of the subsectors provides a more informed perspective on the U.S. competitive position.

HVACR

The United States is the leading source of imports in Australia's HVACR market, holding just over a 17 percent import market share. Italy and China follow close behind, with 16.2 percent and 15.5 percent of the import market respectively. HVACR imports from Thailand, Japan, and Germany round out the top three quarters of Australian subsector import market.

Lighting

Chinese imports dominate Australia's lighting import market, taking a 64 percent share of the market. German imports come in at a distant second, with just 5.4 percent of the import market, slightly above the U.S. share at 5.19 percent.

Wood

Ahead of U.S. wood products in the Australian import market are products from regional players China (27.3 percent market share), New Zealand (18 percent), Indonesia (11.5 percent) and Malaysia (8.5 percent). In 2012, Australia implemented a new regulation geared to combating illegal logging. This presented an opportunity for U.S. wood product exporters, given the United States is known as having a low risk of illegal timber harvest.

Plumbing

There is strong room for growth in U.S. plumbing exports to Australia, which currently hold just 5.3 percent of the import market. China again dominates in this subsector import category, claiming nearly 54 percent of the market. Imports from Germany (6.7 percent) and Korea (6.4 percent) hold the second and third largest shares of the market, with Malaysian imports rounding out Australia's top five at 4.4 percent market share. Together, these five countries claim 75 percent of the Australian plumbing import market.

Insulation

U.S. products hold a solid second place in Australia's insulation import market, with 10.9 percent market share, behind China's 38 percent share claim. Imports from Malaysia and Germany are nearly equal, at 6.6 percent and 6.2 percent respectively, followed by the UK (5.3 percent) and Thailand (4.7 percent) rounding out the top three quarters of the insulation import market.

Windows and Doors

China, Malaysia and Indonesia lead Australia's import market for the subsector, with 49 percent, 10.6 percent, and 8.5 percent market share respectively. The United States is the fourth largest source of Australian insulation imports, with 5.6 percent of the market.

Glass

Again, China dominates in Australia's glass import market, claiming nearly 58 percent of the market. Indonesia stands in a distant second place, at 15.1 percent, with the United States in third position with just a 4.4 percent share of imports.

Resources for U.S. Exporters

Please visit www.export.gov/australia for information from U.S. Commercial Service (CS) Australia, including

- **Market research**
- **Trade events**
- **Trade leads**
- **Services available to U.S. companies**
- **Contact information for CS offices in Canberra, Perth, and Sydney**
- **Info on subscribing to regular updates or connecting on social media**
- **Other information to assist U.S. exporters with Australia export market development**

Canada

Canada ranks first among top export markets for U.S. building product manufacturers due to its proximity, duty-free status under NAFTA, relative lack of non-tariff trade barriers, and ease of commercial relationship establishment. Canada is a large, stable construction market with a robust green building segment driven by market forces and government policies. Opportunities to promote and differentiate products to Canadian buyers can help Sector Group exporters expand their already significant market share. Policy cooperation may help Canada expand the green building component of its construction market.

Overall Rank	HVACR	Insulation	Lighting
1	1	1	1

Doors & Windows	Plumbing	Glass	Wood
1	2	2	2

U.S. Sector Group exporters send 29 percent of their combined annual exports to Canada. If recent export trends persist, this share implies $3 billion in additional market opportunities for Sector Group exporters in 2017 beyond current levels. Provided global construction trends likewise carry forward, in 2017 Canada will be the world's fourth largest construction market outside of the United States.

Although Canada is not anticipated to show strong growth in construction activity over the coming few years, it is a large and stable developed market with private sector preferences and Governmental forces driving increased demand for sustainable construction. U.S. Sector Group exporters are highly competitive in Canada, holding the leading import market share positions in six of the seven subsectors.

Green Building in Canada

Canada has a relatively sophisticated and well-established green building market, as a highly developed economy with a broad societal commitment to environmental sustainability. The country began efforts to increase the performance of its building stock with federal, provincial, and large city Government policies mandating increased sustainability in Government-owned buildings.

The drivers began to shift in 2008, when industry reported starting to see private sector buy-in for green building, led by commercial office, mixed use, and high-rise residential developments.[x] The demand for large commercial office retrofits followed. Results of a 2014 survey of building industry professionals showed that "doing the right thing" and client demand were the strongest triggers for increased green building activity in Canada.[xi]

Today, increased building performance in Canada is being driven on the "push" side by minimum mandatory green performance requirements in building codes and on the "pull" side by voluntary market-based building rating systems. Looking first at mandatory requirements in codes, the federal Government in Canada leads the development of model building codes, which then are adopted, modified, and enforced by provincial and territorial Governments. The model National Building Code of Canada, National Fire Code, National Plumbing Code, and National Energy Code already embody a number of green elements among them: energy conservation, water conservation, materials conservation, indoor air quality, and others.

At the same time, there are multiple voluntary rating systems operating in Canada to recognize different levels of projected building performance, including Leadership in Energy and Environmental Design (LEED) Canada, GreenGlobes, Building Owners and Managers Association (BOMA) Building Environmental Standards (BESt), Building Research Establishment Environmental Assessment Methodology (BREEAM) Canada, EnergyStar, and others.

Results of the 2014 survey noted above show strong plans for green construction across a variety of building types in the coming three years:

- Existing buildings/retrofits – 51 percent of respondents plan green activity
- New commercial construction – 44 percent plan green activity
- New Institutional construction (hospitals, schools) – 44 percent plan green activity
- Commercial interiors – 31 percent plan green activity
- New mid- and hi-rise residential – 31 percent plan green activity
- New low-rise residential – 25 percent plan green activity

Challenges & Barriers to Sector Exports

U.S. building product exports are dominant in Canada's import market. They enter duty-free and enjoy excellent brand recognition and a reputation for quality performance and strong product support. The size of the Canadian construction market, the growth of green building within that market, and the variety of green construction projects planned suggests solid continuing prospects for U.S. building product exporters. Addressing the following types of barriers may help U.S. companies across the Sector Group expand their market share in Canada or enter the market for the first time.

Highly competitive market environment
U.S. sector exporters compete in the Canada market against leading global manufacturers renowned for product quality and innovation. To win sales requires regular direct engagement with buyers to distinguish specific product performance vs. competitors.

To maximize impacts, exporters can pursue trade promotion events (e.g., trade shows, trade missions, reverse trade missions, and technical exchanges) on a subsector-specific basis to ensure focused engagement with potential buyers and specific discussion of a product's performance attributes in areas such as energy and water savings. For wood product exporters, this includes sharing fundamental information about wood's green properties and relevance to sustainable construction, including Life Cycle Assessment (LCA) impacts and other sustainability data.

Price element of competition
Dramatic fluctuations in the Canadian-U.S. dollar exchange rate also can impact the ability of U.S. Sector Group exporters to sell to price-sensitive Canadian buyers on what already can be low-margin product segments. Obtaining information on financing tools available via U.S. GOVERNMENT resources may be of assistance in structuring competitive sales offers.

Geographic size and diversity
In Canada's green building market, there may be important geographic distinctions in the types of building projects with greatest opportunity, among other factors. Market information is best tailored to specific locations and product types to be of real use.

Standards and conformity assessment
Conformance to the relevant Canadian standard is a requirement for all products shipped to Canada. Sector Group exporters must be aware of the Canadian standard and make sure to have proof of conformance. For the Sector Group, many product standards are similar to U.S. standards and products designed to conform to U.S. standards often will also comply with the Canadian standard. However, the exporter must have knowledge of the standard, the tests required to prove conformance, and how and by what organization the testing can be done. The full suite of tools available through the U.S. Government to assist exporters with standards and conformance issues is detailed in the Executive Summary and Findings section of this report.

Labeling
Exporters also must be aware of Canadian federal law requirements regarding product labeling.

Growth of the green construction segment
Sharing information with Canadian authorities and construction industry professionals that may help them expand the green segment of Canada's overall construction market can create opportunity for U.S. exporters. In multilateral discussions, various means of expanding the green segment of the market have been evaluated. Increasing workforce capacity and better understanding successful financial models supporting green building have been identified as areas for further exploration. The U.S. GOVERNMENT welcomes industry engagement toward sharing best practices and other information relevant to these areas.

Figure 1: U.S. Building Product Exports to Canada (2013)

	Canada Import Market Size (2013)	U.S. Share of Import Market	U.S. Rank as Source of Imports
Sector Group (Total)	$14,033,457,089	62.59%	#1
HVACR	$6,352,098,571	65.19%	#1
Lighting	$1,889,237,891	34.99%	#2
Wood	$3,579,394,115	70.10%	#1
Plumbing	$855,669,309	41.25%	#1
Insulation	$359,583,724	86.16%	#1
Windows & Doors	$586,103,440	76.23%	#1
Glass	$411,370,039	88.31%	#1

Source: UN Comtrade

Opportunities for U.S. Companies

Addressing the above types of barriers may help U.S. exporters improve their already impressive share of the Canadian market. This section provides a review of the current state of play and competitive landscape, suggesting where there may be the greatest room for growth.

For the Sector Group as a whole, the United States holds a nearly 63percent share of the current import market and is the leading source of imports for all subsectors, with the exception of lighting. China holds the second largest share of Canada's overall Sector Group import market, at just under 17 percent, followed by Mexico, Germany, and Japan. A look at each of the subsectors provides a more informed perspective on the U.S. competitive position.

HVACR

U.S. products dominate the $6.4 billion Canadian import market for HVACR, at 65 percent market share. China follows, at 9.5 percent, and then Mexico (6.1 percent), Japan (4 percent), Germany (3.4 percent) and Italy (1.8 percent) round out Canada's top five sources of subsector imports.

Lighting

In 2012, China seized the lead in the subsector import market, narrowly edging out products from the United States in terms of overall market share, and maintained its top position in 2013. China holds a 41.7 percent share of Canada's $1.9 billion lighting import market, while products from the United States weigh in at a 35 percent share. Mexican lighting imports claim a distant 8.8 percent share of the market, while those from Germany, Japan, and Italy hold 8.8 percent, 3.2 percent and 2.4 percent shares, respectively.

Wood

U.S. products claim an overwhelming 70.1 percent stake of Canada's wood import market, valued at $3.6 billion. The second most meaningful source of wood imports in Canada is China, at roughly 16 percent market share, after which Germany (1.6 percent), Chile (1.6 percent) and Austria (1.5 percent) round out the top five sources.

Plumbing

Canada again sources the lead amount of its $856 million in imports from the United States, which claims 41.3 percent of the market. Products from China occupy a 30 percent market share, followed by those from Mexico (8.6 percent), Korea (4.4 percent), Taiwan (2.3 percent) and Germany (2.1 percent).

Insulation

Fully 86 percent of Canada's $360 million in insulation imports are sourced from the U.S. After the United States, only four countries enjoy more than a one percent share of the import market: China, Mexico, the Netherlands, and Germany.

Windows and Doors

Over three-quarters of Canada's window and door imports come from the United States, with products from China following at a distant 14.5 percent of the market. Korea and Taiwan hold two percent and one percent shares of the import market, respectively, after which all import sources claim less than one percent market share.

Glass

U.S. glass products overwhelmingly fulfill Canada's $411 million import market demand, at over 88 percent market share. Products from China claim about seven percent of the import market, followed by those from Germany at 1.9 percent import market share. All other countries each claim less than one percent of Canada's glass import market.

Resources for U.S. Exporters

Please visit www.export.gov/canada for information from U.S. Commercial Service (CS) Canada, including

- **Market research**
- **Trade events**
- **Trade leads**
- **Services available to U.S. companies**
- **Contact information for CS offices in Calgary, Montreal, Ottawa, and Toronto**
- **Info on subscribing to regular updates or connecting on social media**
- **Other information to assist U.S. exporters with Canada export market development**

China

China is the world's largest construction market and has a solid government commitment to increased sustainable construction amid rising urbanization. The United States is China's second largest source of imports for the Sector Group, with a 13 percent import market share. U.S. exports to China are expected to continue to grow in all Group subsectors through 2017. Conducting sales promotion in first- and second-tier cities and understanding regulatory requirements and promotional opportunities may help U.S. exporters expand sales in traditional and green building markets.

Overall Rank	HVACR	Insulation	Lighting
3	4	5	4

Doors & Windows	Plumbing	Glass	Wood
5	8	70	1

China is expected to maintain its position as the world's largest construction market for the near future, and is expected to account for a significant share of all new global construction between now and 2020. The Chinese central Government's National New-type Urbanization Plan for 2014-2020 seeks to increase the percentage of China's population living in cities to 60 percent by 2020, driving continued demand for more sustainable construction.

China's Increasing Emphasis on Green Building

As it works to conserve resources and reduce its greenhouse gas emissions, China explicitly acknowledges the contributions that new building construction can make in achieving its national strategic priorities in these areas. China has developed a comprehensive policy approach to green building over the past decade, with efforts intensifying in recent years. Driven by pollution concerns, broad energy efficiency interests, rising public awareness of green benefits, and increasing disposable incomes, this policy momentum is expected to create extensive new opportunities for U.S. sector exporters.

In 2006, China's Ministry of Housing and Urban-Rural Development (MOHURD) introduced a 3-Star green building rating system for residential and public buildings. This rating system rewards performance in land, energy, water, and material savings, as well as indoor environmental quality and operation and management criteria.

In 2013, the State Council launched its Action Plan for Green Buildings, which sets a goal of making twenty percent of all new building construction compliant with specific green building requirements, among other objectives. In support of the Action Plan for Green Buildings, the Government is developing a comprehensive set of seventeen Chinese standards governing land, energy, water, and materials savings, ambient and indoor environment requirements, and other functional requirements. These standards cover building planning and design, construction, retrofit, operation and maintenance, and demolition. After 2014, all Government-invested construction and public buildings greater in size than 20,000 m^2 must comply with Chinese green building standards.

In its 12th Five Year Plan (2011-2015), China set a goal of a 45 percent reduction in carbon dioxide emissions per unit of gross domestic product (GDP), which is recognized as unachievable without significant improvement in the energy efficiency of the country's building stock. Among the tools used in China to increase the energy efficiency of buildings are:

- Mandatory building energy codes for commercial and residential buildings in cities;
- Policies to encourage retrofits in existing buildings;
- National, provincial, and city-level financial incentives for energy efficiency level achievement;
- Appliance standards; and
- A phase-out of incandescent light bulbs in favor or more efficient options.

Across China, individual provinces and cities have established their own policies to increase sustainable construction in alignment with national goals. Growth of green building in China has followed a classic east-to-west movement, with eastern coastal first-tier cities leading the movement, followed by second-tier and third-tier cities moving westward over time. These second and third-tier cities will be important sources of building product demand in China.

Building Product Standards and Conformity Certification

U.S. building product exporters must be in a position to achieve China Compulsory Certification (CCC) for covered products to certify conformance with Chinese product standards. Obtaining detailed information about relevant requirements is an important step for U.S. exporters. Also, where product-specific Chinese standards do not exist, there may be opportunities for U.S. exporters to work with Chinese authorities to inform standards development.

Product-level Promotion

At the product level, there are a number of Chinese procurement list resources that may be useful to U.S. exporters in promoting their products. Among these:

- National Development and Reform Commission (NDRC) - Catalog of Energy Efficient Products for Government Procurement. Covers categories such as HVAC, lighting equipment, windows, and glass, among others.
- MOHURD - Building Material Procurement Platform for Low-Income Housing database. This covers sector products such as insulation, doors and windows, and a number of other building products.
- MOHURD – Catalog of Green Building Materials and Products
- China Quality Certification Center (CQCC) – Catalog of Energy Efficient and Water Saving Products for Public Institutions
- CQC – Catalog of Energy Efficient Equipment and Technology Services for Business

Challenges & Barriers to Sector Exports

U.S. sector exporters enjoy strong brand recognition and a reputation for high product quality and reliability in China. The following types of challenges often constrain U.S. exporters' market development.

Highly competitive market environment

U.S. sector exporters compete in the China market against leading global manufacturers that are renowned for product quality and innovation. To win sales often requires regular direct engagement with buyers, to distinguish specific product performance vs. competitors'. Provision of strong after-sales support can be another important element in achieving sales in China.

To maximize impacts, sales promotion at trade events is best undertaken on a subsector specific basis to ensure focused engagement with potential buyers and specific discussion of a product's performance attributes and technical requirements, as well as the supplier's post-sales support capabilities.

Complex regulatory environment

China's construction arena is heavily regulated, which leaves it subject to potential change without significant warning from Chinese authorities. Without a strong local presence or local partners, understanding regulatory complexities poses a challenge to U.S. exporters. Detailed knowledge of the product standard and conformity assessment process is of particular importance to sector exporters.

In this context, public-private partnership models of export program development have proven successful since the Government-to-Government interface provides opportunities for leverage.

China's regulatory environment also means it can be helpful for U.S. exporters to obtain detailed information on sector-specific regulatory requirements. In particular, information on standards and conformity assessment requirements is key.

Business customs

The commercial landscape in China features cultural and political features that demand investment in longer-term business relationships. Sales are typically not made and sustained until after a business becomes recognized in the marketplace as having products well-suited to Chinese buyers, backed by local relationships. Provision of strong after-sales support is essential to maintaining and growing business in China.

Geographic size and diversity

Market information is best tailored to specific locations and product types to be of real use.

Figure 1: U.S. Building Product Exports to China (2013)

	China Import Market Size (2013)	U.S. Share of Import Market	U.S. Rank as Source of Imports
Sector Group (Total)	$37,973,558,066	13.01%	#1
HVACR	$13,530,329,259	12.24%	#3
Lighting	$2,410,504,436	6.52%	#6
Wood	$18,040,717,594	13.31%	#2
Plumbing	$847,322,215	7.96%	#6
Insulation	$519,254,876	19.38%	#2
Windows & Doors	$89,769,758	5.71%	#6
Glass	$2,535,659,928	21.8%	#3

Source: UN Comtrade

Choices must be made by exporters as to which trade promotion events to pursue in a vast country with many first- and second-tier cities to address.

For exporters unable to attend multiple trade promotion events, information on how to have products included in potentially important procurement lists and databases may be beneficial.

IPR Protection

Some U.S. exporters within the Sector Group have reported finding products on the market in China with forged certification stamps and seals and with misrepresentations of product performance or other forms of improper labelling. The suite of U.S. Government resources available to U.S. exporters related to IPR issues is included in the Executive Summary and Findings section of this report.

Tariffs

Understanding the duty applied to U.S. products upon import to China is an important aspect of assessing competitiveness for U.S. exporters. The U.S. Government is vigilant in seeking opportunities for the U.S. to achieve duty-free or reduced-duty status for exports to China.

Opportunities for U.S. Companies

Addressing the above types of barriers may help U.S. exporters improve their share of the China market. This section provides a review of the current state of play and competitive landscape, suggesting where there may be the greatest room for growth.

Looking at the Sector Group as a whole, in 2013 U.S. sector exporters took the lead over all international competitors, notably edging ahead of Japan, which long had occupied the leading import market share position. Japan now trails the U.S. slightly at 11 percent market share, followed by Germany (9.7 percent), Russia (7.5 percent), and Canada (5.7 percent). A view of each subsector individually gives a more informed sense of the competitive environment.

HVACR

China is the world's largest HVACR market. There is strong demand for high-quality HVACR products in China, with exporters from Germany, Japan, the U.S. and Korea claiming 60 percent of the import market. The United States is the third largest source of subsector imports, with a 12 percent market share. Germany leads the market, with just over 20 percent, followed by Japan, at nearly 19 percent. Korean subsector products rank fourth.

Lighting

Lighting represents an enormous area of opportunity for U.S. subsector exporters. Government authorities throughout China are working to encourage energy efficient retrofits of buildings, in which lighting is widely viewed as a "low hanging fruit" investment option to increase energy performance. U.S. lighting exporters have room to grow their share of the China market, currently at just 6.5 percent. Performing ahead of U.S. exporters are Japan (24 percent share), Germany (17 percent), Korea (8.9 percent) and Taiwan (8.7 percent).

Wood

China represents an enormous market opportunity for U.S. wood products exporters, who currently claim 13.3 percent of the import market and are the second largest source of subsector imports after Russia (16 percent) and just ahead of Canada (12 percent). China's demand for wood and wood products has

shown extremely strong growth, with that trend expected to continue through 2017. While Chinese importers have shown strong interest in importing logs or least-processed wood and undertaking value-added production in China, U.S. exporters have tremendous opportunities in higher value-added wood product sales.

Plumbing

There is ample room for growth in U.S. plumbing exports to China, which are the fifth largest foreign source of imports with 8 percent of the market. Plumbing imports in China are dominated by Japan, which holds a 22 percent market share, followed by Korea (13.2 percent), Germany (13 percent) and Taiwan (9.5 percent).

Insulation

U.S. exporters have steadily been gaining import market share in China's insulation market and now stand a close second to Japan at 19.4 percent market share. Japan leads the import market with just over 20 percent share, and Taiwan (10.3 percent), Germany (6 percent) and Korea (5.8 percent) round out the top five foreign sources of subsector imports.

Windows and Doors

There are solid opportunities for growth in U.S. window and door exports to China, which currently rank sixth in import market share at 5.7 percent. Germany leads the import market, claiming fully 30 percent, followed by Korea (9.2 percent), Taiwan (8.9 percent), Norway (8 percent), and Italy (6.3 percent).

Glass

U.S. exporters enjoy a healthy 22 percent share of China's glass import market, ranking third as the source of imports. Japan and Taiwan out-compete U.S. exporters, with 30 percent and 28 percent of the import market respectively.

Resources for U.S. Exporters

Please visit www.export.gov/china for information from U.S. Commercial Service (CS) China, including

- **Market research**
- **Trade events**
- **Trade leads**
- **Services available to U.S. companies**
- **Contact information for CS offices in Beijing, Chengdu, Guangzhou, Shanghai, Shenyang and Wuhan**
- **Info on subscribing to regular updates or connecting on social media**
- **Other information to assist U.S. exporters with China export market development**

Inquiries regarding export to China may be directed to the China Business Information Center, chinabiz@trade.gov

Upcoming Building Sector Trade Events for U.S. Exporters Interested in China

- **U.S.-China Build Trade Mission with Evergreen Building Products Association – November 2015**
- **China Refrigeration trade show – April 2016**
- **Guangzhou International Lighting Expo trade show, with U.S. Pavilion – May 2016**
- **U.S.-China Build Trade Mission with Evergreen Building Products Association – May 2016**

Gulf Region

Robust construction activity in the Member States of the Gulf Cooperation Council (GCC) fueled double-digit U.S. Sector Group export growth to the region in recent years. Continued public and private construction investment will spur a projected $2.1 billion total combined Sector Group export market opportunity for the region in 2017.

Overview of Gulf Region Markets

2017 Export Market Rankings, GCC Member States						
	Saudi Arabia	UAE	Qatar	Oman	Kuwait	Bahrain
HVAC	10	15	40	37	42	72
Lighting	10	14	37	60	46	30
Plumbing	3	10	12	58	41	37
Wood	33	27	48	57	63	50
Insulation	15	17	66	43	58	47
Doors & Windows	28	7	10	54	57	43
Glass	73	74	10	28	20	63

Broad regional interest in sustainability in this dynamic construction environment, including desired potential development of a regional GCC construction code, underpins expectations of continued opportunity. U.S. products compete in the face of limited 5 percent tariffs (a common GCC tariff rate) in Saudi Arabia, the UAE, Qatar and Kuwait, while U.S. free trade agreements with Bahrain and Oman ease the way for U.S. exports. The 2015 finalization of the GCC Customs Union may further improve regional trade alignment, although regulatory harmonization across sectors is a more distant objective.

Gulf States Construction Environment

The GCC Member States were leaders of growth in construction activity from 2009 to 2012. Saudi Arabia achieved an impressive 13.7 percent compound annual growth rate (CAGR) in construction activity during this period, reaching more than $31 billion in activity in 2012. If trends carry forward, this will rank Saudi Arabia 12th in global construction activity in 2017, not including the United States.[xii] The UAE posted growth of just 1.3 percent CAGR over the same period, likely in large part due to a credit crunch in Dubai that has passed, while construction activity in Qatar grew at 6.7 percent, Oman at 5.6 percent and in Kuwait at 12.6 percent. With this level of dynamism in regional construction activity, U.S. Sector Group exports to the GCC member states experienced strong growth during 2010-2013 and have positive prospects in these markets looking forward to 2017.

While exporting products from the United States is one approach to market penetration in the GCC, leading U.S. building product suppliers increasingly are sourcing products for sales in the GCC from non-U.S. manufacturing facilities they have established in the region, or in other more proximate or lower-cost international markets.

Figure 1: Total U.S. Exports, Sector Group Products

Export Market	2010-2013 CAGR	Projected Exports 2017*
Saudi Arabia	17.14%	$1.3 billion
United Arab Emirates	6.25%	$493 million
Qatar	2.52%	$121 million
Oman	24.96%	$91 million
Kuwait	-0.16%	$82 million
Bahrain	-3.03%	$22 million
Total:	**11.54%**	**$2,109,514,463**

Note: Based on a linear projection derived from 2010-2013 data.

Approaches to Sustainable Construction

The GCC Member States share a strong interest in increasing building performance to achieve environmental benefits, with energy efficiency and water conservation being key focal areas for the hot, arid climate zone. For some GCC countries, environmental sustainability and efficiency in building construction are part of Government priorities to diversify the economy from oil dependency, promote domestic manufacturing, and create jobs. While each country has taken different measures to promote a more sustainably built environment, there also are indications of interest in aligning certain initiatives across the region to facilitate commerce, and ensure that the world's leading technologies can be used in regional construction projects.

One such emergent area involves construction codes, and specifically the concept of developing a regionally aligned GCC building code with a dedicated section on green building and sustainability. Such a code would outline minimum requirements for energy and water efficiency, indoor air quality, and other core elements of building performance. While this remains a concept under development, the fact that authorities in each country have indicated an interest in exploring a harmonized regional code bodes well, signaling recognition of the ability of codes, via the standards they reference, to facilitate trade and enable world-tested solutions to address common climate and resource challenges. The current standards and codes environment in the Gulf Region often presents a complex navigational challenge.

Saudi Arabia

The Saudi Green Building Forum (SGBF), established recently by the Saudi Government, is charged with developing laws and regulations that promote green building initiatives, promoting the collection of standards and systems for green building, disseminating green building info and engage stakeholders, and promoting green building concepts and cultural awareness of green building among citizens through workshops, conferences and publications.

The U.S. Green Building Council's LEED building rating system is recognized in projects in Saudi Arabia, and SGBF is the sole authorized Education Delivery Partner for LEED. As of the date of this report, there are at least 16 certified LEED projects in Saudi Arabia, including King Abdullah Financial District (KFD), the world's largest LEED-registered project, and King Abdullah University of Science and Technology (KAUST), the world's largest LEED Platinum project.

Figure 2: Building Product Exports to Saudi Arabia

U.S. Competitive Position in Saudi Arabia			
	Total Import Market Size (2013)	U.S. Share, Import Market	U.S. Rank as Import Source
HVACR	$3.4 billion	21.68%	#1
Lighting	$775 million	7.21%	#4
Plumbing	$489 million	13.6%	#2
Wood	$1.6 billion	2.42%	#13
Insulation	$237 million	8.13%	#5
Doors & Windows	$166 million	4.6%	#5
Glass	$102,405,375	3.11%	#5

Source: UN Comtrade

Saudi Arabia is expected to pursue expansionary fiscal policy through 2017. The increase in Government spending specifically targets healthcare and education, which will include construction of schools, hospitals, major infrastructure projects, and some 500,000 new affordable homes. If recent trends persist, Saudi Arabia is projected to have at least $48 billion in annual construction activity in 2017.[xiii]

United Arab Emirates (UAE)

Construction firms in the UAE are early and strong adopters of green building, reporting in a 2013 global industry survey[xiv] that more than half of their ongoing projects were green. The high levels of existing adoption are noted as reflecting Government policies and regulations. Among these policies is the existing Government mandate that all of its own buildings be green. There is $35 billion in annual construction activity projected for the UAE in 2017.[xv]

In Abu Dhabi, the Urban Planning Council established the Pearl Rating System (PRS) in support of its *Estidama* sustainable development initiative. This system rates the sustainability of residential communities, buildings and villa homes from design to construction to operation, specifically reflecting the requirements of a hot, dry climate zone where significant energy is required for air conditioning, there is a scarcity of water and high evaporation, as well as infrequent rain. The PRS establishes guidance and requirements, with five possible levels of certification. The system includes eight categories of mandatory and voluntary credits, and all mandatory credits must be met to achieve the 1 Pearl rating. All new development projects in Abu

Figure 3: Building Product Exports to the UAE

U.S. Competitive Position in UAE			
	Import Market Size (2013)	U.S. Share, Import Market	U.S. Rank as Import Source
HVACR	$1.9 billion	12%	#2
Lighting	$1.1 billion	4.3%	#3
Plumbing	$477 million	4.1%	#6
Wood	$776 million	4.2%	#5
Insulation	$84 million	7.8%	#5
Doors & Windows	$106 million	8.5%	#2
Glass	$103 million	12.5%	#3

Source: UN Comtrade

Dhabi must achieve at least the 1 Pearl rating, while Government office projects must achieve at minimum a 2 Pearl certification.

Target green building sectors: The greatest arena of planned green construction activity for UAE firms in the above-referenced survey is in the new institutional sector (Government office buildings, hospitals and schools), which was reported by nearly three-quarters of responding firms. The other market segments reflecting strong planned green activity through 2016 include new commercial buildings (retail, office, hotels) and community projects. Because of the high level of new construction activity, it can be expected that retrofits are not prominent in green building forecasts for the UAE.

U.S. firms face tough competition from local construction firms in the UAE such as EMAAR and others, though many possibilities for collaborating, advising, and subcontracting do exist. The Government of Dubai will make significant investments in construction in preparation of the World Expo 2020, for which 100 new hotels and numerous other event and infrastructure projects are planned.

Qatar

The Global Sustainability Assessment System (GSAS), developed in 2010 by the Gulf Organization for Research and Development (GORD), is Qatar's rating system for green buildings. With 140 sustainability assessment areas, GSAS is a comprehensive mechanism for promoting sustainable urban development while recognizing specific local requirements. Certification criteria are divided among eight elements – energy, water, indoor environment, cultural and economic value, site, urban connectivity, material, and management and operations – with the greatest weighting assigned to the energy and water elements. GSAS was made part of the Qatar Construction Standards 2010. It is mandatory for all public and private sector projects to obtain GSAS certification.

Robust Government spending will continue to support Qatar's National Vision 2030, geared to developing a knowledge-based economy that is diversified beyond the traditional energy (natural gas) sector. Large-scale Government investment can be expected in the education and healthcare sectors. The Government of Qatar also will make considerable construction investment in support of infrastructure and buildings required to host the FIFA World Cup in 2022, expected to include extensive housing and other real estate development projects, in addition to stadium, hotel, transport, and other infrastructure projects. Qatar is projected to have some $10.8 billion in annual construction activity in 2017.[xvi]

Kuwait

By 2017 Kuwait is projected to have $4.4 billion in annual construction activity.[xvii] Ongoing robust activity in the sector is fueled in part by the Government of Kuwait's $104 billion development plan, which includes the planned construction of eight new public hospitals and dramatic expansion of nine existing healthcare facilities. Public and private sector investment has fueled the continuing expansion of a wide range of residential and commercial construction projects. U.S. building products are well-received in Kuwait and the country's construction professionals are familiar with U.S. construction techniques and materials.

The Kuwait Green Building Council was launched in 2012 and is working to promote the U.S. Green Building Council's LEED green building rating system in Kuwait.

Figure 4: Building Product Exports to the Qatar

U.S. Competitive Position in Qatar			
	Import Market Size[1] (2013)	U.S. Share, Import Market	U.S. Rank as Import Source
HVACR	$437 million	15.5%	#1
Lighting	$191 million	8.3%	#4
Plumbing	$81 million	11.3%	#3
Wood	$167 million	3.4%	#9
Insulation	$28 million	6.8%	#4
Doors & Windows	$37 million	13.4%	#2
Glass	$21 million	13.6%	#3

Source: UN Comtrade

Oman

After the U.S.-Oman Free Trade Agreement came into force in 2009, U.S. Sector Group exports to Oman grew an impressive compound average growth rate of 24.9 percent during 2010-2013. As the Omani leadership works to diversify its economy and attract foreign investment, it has placed a focus on improving sectors such as tourism, healthcare, higher education and various industrial sectors. Expansion of any of these arenas suggests facility construction that will create opportunities for U.S. exporters. Looking forward to 2017, continuing Government investment can be expected in tourism facility and infrastructure investment, as well as institutional investments including hospitals and schools. Oman is projected to have some $4.7 billion in annual construction activity by 2017.[xviii]

Bahrain

The Kingdom's Economic Vision 2030 highlights the need for a more diverse economic base, with broader privatization, industrialization, and training and education of the Bahraini workforce. In support of this vision, the Government is working to attract foreign investment in six economic clusters, to drive expansion of tourism, healthcare, education, information and communications technology fields, business services and professional services.

The U.S.-Bahrain Free Trade Agreement has been in effect since 2006, meaning U.S. Sector Group exports enjoy duty-free status. However, following implementation of the FTA, the impacts of the global financial crisis hit and lingered in Bahrain, putting a downward drag on its construction market. While larger-scale public infrastructure projects continued to be funded, many luxury residential type projects were halted outright in the aftermath of the crisis. The Bahrain Sovereign Fund stepped in during 2013 to ensure their viability.

The Government of Bahrain is expected to continue focusing on housing development – and in particular affordable housing – working together in public-private partnerships. In 2012, Bahrain's Ministry of Housing announced a $9.6 billion 5-year plan to build housing units and provide personal finance products. Bahrain is projected to have some $1.8 billion in annual construction activity by 2017.[xix]

Challenges & Barriers to Sector Exports

Tariffs

U.S. Sector Group products enter the markets in Bahrain and Oman duty- free under the Free Trade Agreements the United States has with these countries. With regard to the other GCC Member States, the current status of the GCC Customs Union means that products manufactured outside the GCC are subject to a common 5 percent import duty, with exceptions for select product categories that do not impact the Sector Group. Products manufactured within one GCC Member State enter all other Member States duty-free. Some American companies whose products are used in construction, such as glass, have decided to open manufacturing plants in the region to take advantage of the GCC Customs Union.

Highly competitive market environment

The Gulf markets have proximity to high-quality European products and strong logistics relationships with lower-cost suppliers in Asia. While enjoying a strong reputation for quality and reliability in the region, U.S. building product suppliers still must overcome transport costs and deliver on product performance and post-sales service requirements to compete in Gulf region markets. To win sales requires regular direct engagement with buyers to distinguish specific product performance vs. competitors. To provide needed sales follow-up support, U.S. exporters are well served by an in-country presence.

Trade promotion activities should consider multiple elements: attunement to country-specific market opportunities, and the ability of the target trade event to perform a regional convening role for buyers. Reverse trade missions, bringing Gulf buyers to the

United States, also are meaningful. Events should facilitate U.S. Sector Group exporters' full elaboration of their products' green features and relevance to local rating systems.

Standards and conformity assessment

Under the GCC Customs Union, the vision is to unify the Member States standards and conformity assessment regimes. This remains a work in progress, and until a uniform GCC standard and conformity assessment process is established, each Member State applies its own standards, conformity assessment and labelling requirements.

While some international standards developed by U.S.-based standards development organizations (SDOs) have been adopted in various Member States, U.S. industry has expressed concerns that some may be moving toward a more restrictive standards regime. Standards established by European SDOs are noted as gaining increased attention. In addition to a standards environment lacking in consistent clarity and transparency, industry has expressed concern about a similar lack of clarity in conformity assessment.

When local standards organizations have reached out to U.S. businesses for comments on standards or other regulations, it may behoove American companies to identify team members as POCs for standards developers and other regulatory agencies, or work with local chambers of commerce or bilateral trade groups to coordinate industry input. The full suite of U.S. Government tools that can be brought to bear in assisting exporters with standards and conformance issues is detailed in the Executive Summary and Findings section of this report.

Resources for U.S. Exporters

Please visit the country-specific sites listed below for information from the U.S. Commercial Service (CS) on:

- **Market research**
- **Trade events**
- **Trade leads**
- **Services available to U.S. companies**
- **Contact information for CS offices throughout the region**
- **Info on subscribing to regular updates or connecting on social media**
- **Other information to assist U.S. exporters with Gulf Region export market development**

Bahrain
http://bahrain.usembassy.gov/tradeandcommerce.html

Kuwait
www.trade.gov/kuwait

Oman
www.trade.gov/oman

Qatar
www.trade.gov/qatar

Saudi Arabia
www.trade.gov/saudiarabia

United Arab Emirates
www.trade/gov/uae

This Page Intentionally Left Blank

Japan

Japan's #4 ranking for the Sector Group is driven in large part by strong performance and future prospects for U.S. wood products exports. Japan is a Top 10 market for 5 of the 7 subsectors, but overall Japanese imports are somewhat constrained by the presence of world-leading domestic Japanese manufacturers. While U.S. products are competitive and enjoy a good reputation, they must compete with high-quality domestic suppliers of HVACR, plumbing, glass and other building product categories. For U.S. wood product exports, Japan continues to be a highly promising market. As Japan works to conserve energy while transforming its energy mix, existing and new buildings are priority targets.

Overall Rank	HVACR	Insulation	Lighting
4	12	8	6

Doors & Windows	Plumbing	Glass	Wood
6	14	4	3

ITA projects that Japan will maintain its position as the second largest construction market in the world outside the United States through 2017 and beyond. While construction growth in Japan is expected to be modest in the coming years, the baseline market is large, highly stable and reflects trends that will continue to drive demand for the advanced building products U.S. exporters offer. The Japanese market includes dense urban centers and extensive existing building stock in need of renovation. Its population has high disposable income, a commitment to energy and other resource conservation, and a strong interest in new technologies to achieve greater environmental friendliness in the built environment.

With a low birth rate, Japan's population is declining. Nevertheless, certain demographic trends suggest continuing opportunity in residential and other construction. The generation of Japanese known as the Echo Boom generation is in its prime home-buying years and new household formation for this large demographic group is now beginning to peak. At the same time, Japan's aging population, which projections indicate may reach as high as 40 percent of the population by 2060[xx], means that new construction can be anticipated in a wide range of healthcare facility types and multi-unit type elder housing. Specific opportunities for U.S. exporters associated with these market segments are discussed below.

Japan's wooden housing market is the largest in the world outside the United States, and the residential housing sector accounts for an estimated 85 percent of wood use in Japan.[xxi] It is unsurprising that wood is a huge driver of Japan's 2017 ranking. Wood products are the leading subsector within the Sector Group, claiming fully sixty percent of Sector Group exports to Japan in 2013 and presenting the greatest projected growth through 2017.

Green Building in Japan

The Japanese Government recognizes that housing and other buildings account for 30 percent of total energy consumption in Japan, with significant increases in energy use by buildings in the past two decades compared with sectors such as transportation and industrial use.[xxii] Accordingly, buildings have been the target of a series of regulations, guidelines, and incentives to improve energy conservation reaching as far back as the Energy Saving Act of 1979. Since 2012, the Japanese Government has embarked on a focused roadmap to roll out a series of building energy efficiency policies, including programs to:

- Promote the construction of houses and buildings with higher energy efficiency performance (via labeling and energy efficiency information provision, promoting construction of zero energy homes in which the total amount of energy used is roughly equal to the renewable energy created on site, promoting use of advanced carbon dioxide reduction technologies, and use of certification programs);
- Assure minimum energy efficiency performance of houses and buildings via revised Energy Efficiency Standards for large, medium, and small buildings (earliest mandatory compliance from 2017);
- Improve energy efficiency of existing houses and buildings (via promotion of renovations, improvement of building materials and equipment, and considering evaluation and labeling system for energy efficiency);
- Increase capabilities of individuals and organizations (trainings, evaluations, improving quality of building materials and equipment).

Provisions pertaining to fundamental "green" areas such as energy efficiency, indoor air quality, and water efficiency are included in Japan's Building Standard Law (BSL). On the market-based "pull" side of the equation, the Japan Green Building Council maintains the building rating system known as the Comprehensive Assessment System for Built Environment Efficiency (CASBEE). Criteria for this voluntary rating system include energy (thermal load, natural energy, building system efficiency), water efficiency, and indoor environment (sonic, thermal, illumination, air quality), among other rating categories.

Challenges & Barriers to Sector Exports

Highly competitive market environment

As noted above, Japan has a strong base of domestic manufacturers producing Sector Group products at a global leadership level. In Japan's import market, U.S. sector exporters also must compete against other leading global manufacturers renowned for product quality and innovation. To win sales requires regular direct engagement with buyers to establish familiarity and confidence and to distinguish specific product performance vs. competitors.

- To maximize impacts, sales promotion should be undertaken on a subsector specific basis to ensure focused engagement with potential buyers and specific discussion of a product's performance attributes in areas such as energy and water savings.
- Green building events may be leveraged to underscore U.S. product advances. ITA analysis indicates a general sentiment in Japan that European countries, and specifically Germany, may have the greatest experience with green products. Working with audiences of Japanese builders, architects, and other industry professionals to introduce U.S. product and technology offerings in the green arena will help exporters.
- For wood product exporters, this includes sharing fundamental information about wood's green properties and relevance to sustainable construction, including Life Cycle Assessment (LCA) impacts and other sustainability data. Wood products promotion will benefit from coordination with program priorities under the USDA/FAS public-private partnership.

Tariffs

U.S. products compete well in Japan in the current WTO tariff environment, but tariffs place a burden on U.S. exporters all the same. Additionally, in Japan –and in priority realms such as wood products trade – tariffs escalate, meaning they may increase with the level of technical sophistication or processing inherent in the product's manufacture. The U.S. Government pursues opportunities to achieve tariff reduction or elimination, including in the current Trans-Pacific Partnership negotiations.

Incentives to prefer local content

Certain regulations in Japan have served to incentivize use of local Japanese products over imports of Sector Group products. One recent example of this in the leading Sector Group segment of wood products is the Wood Use Point Program, which gave financial incentives for the use of Japanese wood species. While U.S. wood product exporters gained an exemption for Douglas Fir (i.e. obtained classification for Douglas Fir as a local species for purposes of the program), it stands as an example of Government-driven practices that must be monitored to ensure a level playing field.

Trade agreements, including TPP, provide an opportunity to limit barriers associated with local content requirements.

Figure 1: U.S. Building Product Exports to Japan (2013)

	Japan Import Market Size (2013)	U.S. Share of Import Market	U.S. Rank as Source of Imports
HVACR	$7,644,879,383	7.82%	#3
Lighting	$1,578,172,187	4.36%	#5
Wood	$11,740,389,604	8.30%	#5
Plumbing	$764,750,434	2.63%	#8
Insulation	$156,209,450	21.84%	#2
Windows & Doors	$810,100,361	3.28%	#5
Glass	$257,184,382	10.32%	#4

Standards and conformity assessment

Standards and conformity assessment requirements are oft-cited non-tariff trade barriers for Sector Group exporters. U.S. suppliers must be aware of the Japanese standard and make sure to have proof of conformance. In Japan, there are cases in which a standard or conformity assessment may not be mandatory, but may be required for market acceptance. The full suite of U.S. Government tools that can be brought to bear in assisting exporters with standards and conformance issues is detailed in the Executive Summary and Findings section of this report.

Trade agreement negotiations, including TPP, provide an opportunity to pursue provisions that reinforce existing commitments under the WTO TBT agreement and strive for inclusion of next-generation commitments beyond WTO obligations.

Growth of the green construction segment

It is worthwhile for to share information with Japan that may help it expand the green segment of its overall construction market. Increasing workforce capacity, better understanding successful financial models that support green building, and technical information exchanges are areas in which the U.S. Government and industry may seek to share best practice and other information with Japan.

Opportunities for U.S. Companies

Tackling the above types of barriers may help U.S. exporters increase their position in Japan's import market for Sector Group products. For the Sector Group as a whole, the United States is currently the second largest source of Japan's imports, claiming 7.6 percent of the Japanese import market after China's dominant 31.5 percent market share position. A look at each of the subsectors provides a more informed perspective on the U.S. competitive position.

HVACR

Japan traditionally has not been a key target market for U.S. HVACR exporters, ranking twelfth in 2013 at less than 2 percent of total U.S. HVACR export value. Japan is expected to remain ranked twelfth through 2017; Japanese firms are among the leading global HVACR manufacturers, setting a high competitive bar for entry for higher quality imported products, such as those from the U.S.

China dominates as a source of Japan's subsector imports, with a 55.4 percent share of the import market. Some imports from China are those of Japanese companies manufacturing in China. The next largest import source is Thailand, with nearly 12 percent of the market. U.S.-sourced HVACR products claim 7.8 percent of the import market, with products from Germany and Korea following at 4.2 percent and 3.9 percent respectively.

Lighting

The Japanese market holds solid prospects for innovative U.S. lighting products, in both retrofits and new construction. Well recognized as a "low hanging fruit" element in increasing building energy efficiency, lighting also offers other gains seen as attractive in Japan. These include the emergent recognition of the non-visual effects of light, in terms of different spectrums and intensities of light impacting well-being, productivity, and overall comfort. This suggests opportunity for a wide range of higher-technology lighting products in schools, healthcare facilities, elder care facilities, offices, and sports facilities. Biodynamic lighting has been a focus of applications suited to the elderly, based on evidence that light may play a factor in sleep regulation and other biological functions.

The U.S. currently ranks fifth as a source of Japan's lighting imports, at a 4.4 percent share of the import market. China again stands as the dominant source of imports in Japan's lighting import market, claiming fully 60.5 percent market share. Behind those from the United States come products from Korea, Germany, and Indonesia.

Wood

U.S. wood product exporters benefit from the United States being an established historical wood product supplier; proximity to Japan of suppliers on the U.S. west coast; the high quality and consistency of U.S. wood products; perceptions of legal and sustainable sourcing of wood products in the United States; and the Japanese market demand for U.S. wood species. U.S. industry sees particular market opportunity in Japan in high-value market segments such as traditional post-and-beam style housing, the emergent do-it-yourself segment, and wide-ranging renovation areas.

U.S. wood products hold an 8.3 percent share of Japan's import market, behind those from market-leading Canada (12 percent), China (11 percent), Malaysia (10 percent) and Indonesia (8.7 percent).

Plumbing

As in the case of HVACR, plumbing exporters traditionally have not seen Japan as a major target market. In 2013 Japan ranked 16th as a plumbing export market, claiming less than a 1 percent share of total U.S. plumbing exports. Japan is home to world-leading plumbing product manufacturers. Ranking eighth as a source of Japan's imports, U.S. plumbing products hold only a small 2.6 percent share of Japan's import market, well behind those from China, which holds the leading 49.4 percent market share. Imports from China include products of Japanese firms that are manufactured in China. Products from the region – Vietnam, Thailand, the Philippines, Taiwan, and Korea - fill in the ranks of leading import source markets.

Insulation

U.S.-sourced insulation products claim a healthy 21.8 percent share of Japan's import market, nearly rivaling the 28.5 percent import share position of products from China. Insulation from the United Kingdom, Korea and Germany round out the sourcing of three quarters of Japan's insulation imports.

Windows and Doors

Products from Thailand (41.7 percent market share), China (33.2 percent), Philippines (10.9 percent) and Indonesia (3.3 percent) take greater shares of the Japan window and door import market than U.S.-sourced products, which claim only 3.3 percent of the import market.

Glass

Glass imports from the United States claim 10.3 percent of Japan's glass import market, ranking the United States fourth in terms of import sources. Taiwan leads the ranks, with 26.3 percent import market share, followed by Korea (25.8 percent) and China (10.3 percent).

Resources for U.S. Exporters

Please visit www.export.gov/japan for information from U.S. Commercial Service (CS) Japan, including

- **Market research**
- **Trade events**
- **Trade leads**
- **Services available to U.S. companies**
- **Contact information for CS offices in Tokyo and the Osaka-Kobe area**
- **Info on subscribing to regular updates or connecting on social media**
- **Other information to assist U.S. exporters with Japan export market development**

Upcoming Building Sector Trade Events for U.S. Exporters Interested in Japan

- **Living & Design Show in Osaka – October 2015**
- **Japan Home & Building Show, with U.S. Pavilion – November 2015**
- **Architecture + Construction Materials Show – March 2016**

Mexico

Mexico ranks second among top markets for U.S. building product exporters due to its proximity, established transport links and duty-free status under NAFTA. Mexico's construction environment is highly receptive to U.S. products and reflects an emerging interest in green building. Near-term, leveraging subsector-specific trade promotion events, market intelligence and export financing information to empower SME exporters may help expand the strong existing U.S. competitive position in Mexico. Encouraging increased transparency and a more aligned regulatory environment may expand longer-term U.S. market access to both traditional and green building opportunities.

Overall Rank	HVACR	Insulation	Lighting
2	2	2	2

Doors & Windows	Plumbing	Glass	Wood
2	1	3	4

U.S. Sector Group exporters sent 16 percent of their combined exports, worth $5.8 billion, to Mexico in 2013. If recent export trends persist, this implies $8.1 billion in export opportunity in Mexico in 2017. U.S. Sector Group exporters are highly competitive in Mexico, holding the leading import positions in all of the seven subsectors. U.S. building products enjoy a strong reputation for quality and reliability, and traditionally have been well received by Mexican construction industry actors seeking to offer projects featuring higher quality materials and equipment.

In 2017, Mexico is projected to be the world's twelfth largest construction market outside of the United States.[xxiii] While overall construction market growth is expected to remain modest in the coming few years, improving economic conditions, low interest rates, and increased foreign investment in this large-scale market is expected to support growing opportunity in both public procurement and private projects for U.S. exporters through 2017. Mexico's National Infrastructure Program, for execution during the 2014-2018 period, is expected to create new opportunities for Sector Group exports in tourism and health facilities, among other areas. Looking to private-sector initiatives, local and foreign-funded project activity is creating opportunity in new construction and retrofitting of mixed-use buildings, shopping malls, retail stores, industrial and manufacturing facilities, and distribution centers. One specific initiative underpins expectations of continuing opportunity in energy efficient housing. The 2012 cooperation agreement between the World Bank's International Finance Corp. (IFC) and a major Mexican homebuilder provides for some 36,000 housing units to be built annually through 2017 to mitigate a housing shortfall of nine million units. The housing to be constructed is slated as energy efficient units for a low income demographic.

Green Building in Mexico

Mexico recognizes buildings as the country's largest consumers of electricity and necessarily a key focal area in working to reduce greenhouse gas emissions. As such, Mexico is taking steps toward greener, more "environmentally friendly" practices in the built environment, and has shown interest in learning from the experiences of U.S., Canadian, and other international best practices. The construction industry in Mexico has established a green building council, and has embraced green building in part as a means of establishing project differentiation based on higher quality materials and equipment.

Public policies aimed at increasing sustainable construction in Mexico have been concentrated in the housing sector. Such policies include incentives and subsidies for incorporating green technologies, and establishment of voluntary and mandatory domestic standards for products and processes.

In Mexico, standards for products, systems and services include (i) Mexican Official Standards (NOM), which are *mandatory* federal Government technical regulations that relate to health, safety, and protection of the environment and consumer; and (ii) Mexican Standards (NMX), *voluntary* standards for quality specifications of products, processes, systems and services. In Mexico, only standards developed by the International Organization for Standardization (ISO), the International Electrotechnical Committee (IEC) and the International Telecommunications Union (ITU) are recognized as international standards, while those from other standards development organizations are considered foreign standards even if they meet the criteria of the World Trade Organization (WTO) Technical Barriers to Trade (TBT) Decision on Principles for the Development of International Standards. In addition to NOM and NMX, the Technical Suitability Report (DIT) is a commonly used set of process rules created on a product-specific basis.

Specific to buildings, multiple Mandatory Mexican Standards (NOM) exist for energy efficiency in the residential and commercial building envelope, and for specific equipment and systems for lighting, appliances, HVACR, insulation and other Sector Group products. There is also a Mexican Voluntary Standard (NMX) for Sustainable Buildings, among other voluntary performance guidelines. In the realm of DITs in Mexico, there are product-specific guidelines for windows, glazing systems, thermal resistance elements, roofs, tiles, water heaters, and other building components.

Challenges & Barriers to Sector Exports

Highly competitive market environment
While U.S. Sector Group product manufacturers enjoy strong brand recognition and a reputation for reliability and quality in Mexico, they must be prepared to compete on price and product performance with leading global players. Growth of sales requires direct engagement with buyers in settings that permit detailed presentations of product technical specifications and performance attributes.

Traditional trade promotion activities (e.g., trade shows, trade missions, reverse trade missions, technical dialogues, and exchanges) are effective, particularly for SME exporters. These events should be undertaken on a subsector-specific basis to ensure that U.S. exporters have focused engagement with Mexican buyers, allowing technical discussions on product performance capabilities and requirements.

Utilization of export finance products available through the U.S. Government may be helpful to exporters to enter, or expand in, Mexico.

Standards and conformity assessment
U.S. industry reports standards and conformity assessment issues (certification, inspection, sampling and testing, accreditation) as the largest non-tariff barriers to trade in the sector. These types of barriers, with inherent cost impacts, are burdensome for all exporters and have disproportionate impact on SMEs. The full suite of U.S. Government tools that can assist exporters with standards and conformance issues is detailed in the Executive Summary and Findings section of this report. An ITA Standards Attache is available in Mexico City to assist U.S. companies with standards-related trade issues.

In Mexico, U.S. exporters will benefit from understanding subsector-specific information on standards (mandatory and voluntary) and conformity assessment requirements to best determine paths to compliance and reflect compliance in product marketing.

This is complicated by current developments in the Mexico market. First, Mexico is conducting an overhaul of its standardization system, including consolidating standards development under a unified entity. The exact timetable and funding source for this consolidation remain unclear. Outside of the standards system restructuring, U.S. stakeholders report a general lack of transparency in engaging with the Mexican Bureau of Standards.

In addition, Mexico currently recognizes only ISO, IEC, and ITU standards as “international standards” for mandatory requirements.

The U.S. Government will work to stay closely abreast of these changes. The goal is to ensure that development of all standards, including those relevant to construction and green building, is transparent, fair, and inclusive of opportunities for stakeholder comment.

Opportunities may increase after Trans-Pacific Partnership (TPP) implementation, as TPP includes chapters on regulatory coherence not found in NAFTA.

Figure 1: U.S. Building Product Exports to Mexico (2013)

	Mexico Import Market Size (2013)	U.S. Share of Import Market	U.S. Rank as Source of Imports
Sector Group (Total)	$10,794,257,630	52.32%	#1
HVACR	$6,519,287,315	53.61%	#1
Lighting	$1,487,422,066	45.45%	#1
Wood	$1,542,755,210	43.29%	#1
Plumbing	$775,940,699	59.96%	#1
Insulation	$282,450,658	72.47%	#1

Capacity to expand green building
Mexico has shown strong interest in gaining policymaking and technical expertise from the international community.

Opportunities for U.S. Companies

Tackling the above barriers with the tools named may help U.S. exporters increase their already dominant position in Mexico's import market for Sector Group products. For the Sector Group as a whole and for every subsector within the Sector Group as a whole, the United States is currently the leading source of Mexico's imports, claiming more than half of the Mexican import market. A look at each of the subsectors provides a more informed perspective on the U.S. competitive position.

HVACR
U.S. exporters hold a 54 percent share of Mexico's HVACR market and HVACR imports from the U.S. grew at a compound annual growth rate (CAGR) of 9.3 percent during the 2010-2013 period. This is slightly higher than the overall HVACR import market growth rate of 8.8 percent, and well behind the growth rate of imports from China at 12.5 percent, for the same period. Behind China's 17 percent share of the import market come products from Japan, Korea and Germany with market shares of 5.2 percent, 4.8 percent and 4.1 percent respectively.

Lighting
Mexico's lighting import market grew at 8.6 percent CAGR during the 2010-2013 period, with U.S. products consistently holding the largest share over that timeframe. Imports from China, at 29 percent of the market, grew at the higher 11.8 percent rate during the period. German imports also posted an impressive growth rate of just under 16 percent CAGR, with these imports claiming a 7 percent share of Mexico's import market. Japan and Korea round out the top five lighting import sources, accounting for 4 percent and 1.8 percent of the market, respectively.

Wood
Three quarters of Mexico's wood imports come from its top five sources: the U.S., Chile, China, Brazil, and Spain. The United States holds a dominant 43 percent import market share, with products from Chile ranking a distant second at 16 percent. Exports from China have grown rapidly, with China's 9 percent of the market reflecting over 11 percent CAGR over 2010-2013, followed by products from Brazil and Spain at 5 percent and 4 percent of Mexico's import market.

Plumbing
Plumbing imports into Mexico have been flat, showing less than one percent growth over the 2010-2013 period. However, there has been a notable shift of imports from the dominant market share holding United States shrinking by over one percent in this timeframe while imports from China have grown 11 percent. Chinese plumbing products now claim a 16 percent market share, behind the United States' 60 percent market share position.

Insulation
Mexico's insulation imports have moved in the opposite direction from plumbing, showing an increase of more than 10 percent between 2010 and 2013. The United States claims nearly three quarters of the import market. Chinese imports have posted significant gains at a 33.5 percent CAGR in this timeframe, and now hold a 10 percent share of Mexico's insulation import market. Germany, Japan and Canada contribute 3.3 percent, 2.7 percent, and 2.5 percent market share, respectively.

Windows and Doors

U.S. doors and windows claim fully 68 percent of Mexico's import market, posting a growth rate of 8.6 percent during the 2010-2013 period. The overall product import market grew at a 6 percent CAGR during this timeframe. Imports from China grew at 9 percent during the same period, ending at 12 percent of the import market in 2013. The greatest growth in window and door exports was seen from Korea, at 56 percent over the 2010-2013 period, Italy (30 percent CAGR) and Germany (28 percent CAGR). French imports also grew at a dramatic 109 percent rate, but claim less than 1 percent of Mexico's import market.

Glass

Mexico's import market for glass shrank at nearly a 10 percent CAGR during 2010-2013, with imports from China and India posting the only notable growth at 47 percent and 505 percent respectively. Imports from Germany also grew at a rate of 6 percent. U.S. imports claim an 81 percent share of the import market, and posted decreases of 7.5 percent over 2010-2013.

Resources for U.S. Exporters

Please visit www.export.gov/mexico for information from U.S. Commercial Service (CS) Mexico, including

- **Market research**
- **Trade events**
- **Trade leads**
- **Services available to U.S. companies**
- **Contact information for CS offices in Mexico City, Monterrey, and Guadalajara**
- **Info on subscribing to regular updates or connecting on social media**
- **Other information to assist U.S. exporters with Mexico export market development**

Upcoming Building Sector Trade Events for U.S. Exporters Interested in Mexico

- **Expo Nacional Ferretera, September 10-12, 2015 Guadalajara, Jalisco, Mexico http://www.expoferretera.com.mx/en/**
- **Expo CIHAC Building and Housing Exhibition, October 13-17, 2015 Centro Banamex Mexico City http://www.cihac.com.mx/en**

United Kingdom

Increasing sustainable construction is a core component of the United Kingdom's (UK) strategy to address climate change, rendering the sixth largest global construction market outside the United States of strong interest to U.S. Sector Group exporters. U.S. products enjoy a strong reputation for quality and reliability in the UK. Understanding regulatory requirements and conducting sales promotion at focused trade events may boost the competitive position of U.S. Sector Group exporters in traditional and green building markets in the UK.

Overall Rank	HVACR	Insulation	Lighting
10	8	3	13

Doors & Windows	Plumbing	Glass	Wood
18	9	68	10

ITA views the Sector Group ranking for the UK to be somewhat muted in contrast to future export prospects, given that data for the period 2010-2013 (utilized to project forward to 2017) coincides perfectly with a period in the UK in which construction activity was suppressed due to Government austerity measures. In 2014, the UK construction industry experienced significant growth, particularly in the residential sector. Construction activity is expected to continue to grow through 2017, with new construction in the public and private residential arena showing the best near-term prospects. The UK is a Top 10 market for the majority of subsector product categories in the 2017 rankings.

Green Building in the United Kingdom

Green building has a well-established history in the UK, with the creation of the voluntary Building Research Establishment Environmental Assessment Method (BREEAM) system for rating the sustainability of non-residential building designs some twenty years ago, and a mandatory Code for Sustainable Homes introduced in 2006. Although BREEAM is a voluntary scheme, the majority of local planning authorities require that new buildings in the UK are certified and achieve high BREEAM ratings.

More recently, public policies have placed sustainable construction at the heart of the UK's efforts to address climate change. In 2008, the UK Government committed to a legally binding target of reducing its greenhouse gas emissions 80 percent by 2050. The UK Carbon Plan, launched in 2011, details specific actions and timelines toward fulfilling its commitments and acknowledges that improving energy efficiency across sectors will be required to achieve national goals. Examples of specific actions the UK Government has taken in order to achieve the targets set by the Carbon Plan, with likely impacts on demand for Sector Group products include the following:

- CRC Energy Efficiency Scheme – A mandatory reporting and pricing scheme to improve energy efficiency in large public and private organizations.
- Green Deal – A program that allows businesses and non-domestic organizations to pay for some or all of their energy-saving property improvements through savings in their energy bills over time.
- Guidance on financing energy efficiency – This guidance, updated beginning in January 2015, educates public sector organizations on available options to finance energy efficiency improvement projects in their facilities.

The UK industry has embraced sustainable construction; this strong commitment to green building is reflected in a recent industry survey of firms across twenty-nine European countries.[xxiv] The UK firms responding indicated that 52 percent of their work is green, the strongest showing among respondents on a

national basis. In the same survey, UK firms indicated the most significant area for planned green construction activity is in existing building renovations and retrofits, reported by 65 percent of responding firms. More than a third of firms responding also indicated planned green activity in communities, new commercial buildings (e.g. offices, stores, and hotels) and new institutional buildings (hospitals and schools).

UK and EU Regulations Affecting Sector Group Exporters

The UK is a member state of the EU, and building products tested and certified in the United States to American standards typically need to be re-tested and re-certified to EU requirements. The EU Construction Product Regulation underpins trade in construction products, and U.S. building product exporters must comply with its requirements in order to export to the UK market. As an EU member, the UK is currently implementing the EU's Procurement Directives. These have been developed to provide for fair, transparent and competitive procurement across the member states. The first of the UK's implementing regulations, the Public Contracts Regulations 2015, took effect on February 26, 2015.

EU Construction Product Regulation (CPR)
The CPR establishes harmonized rules for the marketing of construction products in the EU and provides a common technical language to assess the performance of construction products. It is relevant to any construction product covered by a European harmonized standard or for which a European Technical Assessment has been issued. Complying with the CPR involves a multi-step process, including establishing an EU Declaration of Conformity for the product and affixing the CE marking to a product.

Challenges & Barriers to Sector Exports

U.S. building products enjoy strong brand recognition and a reputation for high quality in the UK, but challenges remain to expansion of the U.S Sector Group's competitive position. Barriers to building product exports are summarized below. The challenges common to all Sector Group exporters suggest a focus on subsector specific sales promotion targeted to highlight product performance attributes and buyer matchmaking is essential. At the same time, engagement geared to improving exporters' understanding of the local regulatory and business environment can be crucial.

Highly competitive market environment
The UK has close proximity to European producers of high-quality Sector Group products, as well as access to global suppliers of competitively priced building products. U.S. suppliers must overcome transport costs and deliver on product performance and post-sales service requirements to compete in the UK. To win sales often requires regular direct engagement with buyers to distinguish specific product performance vs. competitors and highlight a product's "green" performance attributes, in areas such as energy and water savings and indoor air quality improvement.

Tariffs
U.S. products compete well in the UK in the current WTO tariff environment, but tariffs place a burden on U.S. exporters compared with products from the EU member states that enter the UK duty-free . The U.S. Government is pursuing opportunities to achieve tariff relief in the Trans-Atlantic Trade and Investment Partnership (TTIP) negotiations.

Regulatory environment – UK and EU regulations
Exporters may experience complexity in determining which EU regulations apply to their products, on top of any UK requirements. As noted above, the EU Construction Products Regulation and associated Declaration of Performance and CE marking requirements are among the most important EU regulations affecting the Sector Group. Detailed knowledge of the product standard and conformity assessment process is important to all Sector Group exporters.

Exporters also should pursue subsector-specific regulations affecting trade. An example is the EU Timber Regulation, which is geared to combatting trade in wood products from illegally harvested timber.

Figure 1: U.S. Building Product Exports to the UK (2013)

	UK Import Market Size (2013)	U.S. Share of Import Market	U.S. Rank as Source of Imports
Sector Group (Total)	$15.8 billion	6.5%	#4
HVAC	$6.8 billion	10.7%	#2
Lighting	$2.2 billion	3.3%	#9
Plumbing	$1.3 billion	1.7%	#15
Wood	$4.5 billion	3.2%	#8
Insulation	$220 million	10.5%	#2
Windows & Doors	$815 million	1.4%	#18

Source: UN Comtrade

Business customs

The commonality of the English language does not translate to an instantly understandable business environment in the United Kingdom. Market intelligence is available through the U.S. Government to navigate the local market and understand the competitive state of play, available sales channels, applicable regulations and standards, and other fundamental aspects of the UK market.

Opportunities for U.S. Companies

Tackling the above types of barriers with the tools named may help U.S. exports increase their position in the UK's import market for Sector Group products. For the Sector Group as a whole, the United States is currently the fourth largest source of the UK's imports, claiming 6.5 percent of the market after products from Germany, China and Italy. A look at each of the subsectors provides a more informed perspective on the U.S. competitive position.

HVACR

U.S. HVACR products are highly competitive in the UK, holding the second largest share of the import market (10.7 percent) after products from Germany, which hold just under 20 percent of the import market. Rivaling U.S. products are those from Italy, also at about 10.7 percent of the import market, followed by HVACR products from France (7.5 percent), China (5.7 percent), Belgium (5.1 percent) and Japan (4.9 percent).

Lighting

In the lighting subsector, U.S. products fare relatively poorly in an import market led by China, with nearly 37 percent market share, and with products from seven European rivals: Germany, France, the Netherlands, Italy, Hungary, Belgium, and Spain assuming larger shares of the market than U.S. products.

Opportunities may exist in niche products and those at the cutting edge of green attributes. This relates to the emergent recognition of the non-visual effects of light, in terms of different spectrums and intensities of light impacting well-being, productivity, and overall comfort. There may be stronger opportunities for export of a wide range of higher-technology lighting products in schools, healthcare facilities, elder care facilities, offices, and sports facilities.

Plumbing

U.S. products claim a modest 1.7 percent share of the UK plumbing import market, and rank fifteenth in terms of overall competitive position. German products prevail at nearly 24 percent import market share, followed by those from China at just over 19 percent.

Wood

Wood products from the United States claim a modest 3.2 percent of the UK's import market, which exceeds $4 billion annually. Sweden is the UK's largest source of wood imports, holding nearly 17 percent market share, followed closely by China (13.5 percent) and Germany (10.2 percent). After Germany, European rivals Finland, Ireland, Latvia and Italy lead the UK import market ahead of the 8th place competitive position of U.S. products.

Insulation

U.S. insulation products are strongly competitive in the UK, claiming a 20.4 percent share of the subsector import market. As a source of imported insulation

products, the U.S. ranks second only after Germany, which holds a slightly larger share of the import market at 20.9 percent.

Windows and Doors

Ranked 18th as an import source, U.S. windows and doors claim only 1.4 percent of the UK's import market for subsector products. This import market subsector is led by products from Poland (12.8 percent market share) and Germany (11.6 percent), which are closely followed by products from producers in Indonesia (9.4 percent) and China (9 percent).

Glass

Glass products shipped from the United States claim just 4.2 percent of the UK's glass import market, well behind products from the market leader Germany (25.5 percent), Belgium (13.9 percent) and China (7.9 percent).

Resources for U.S. Exporters

Please visit www.export.gov/unitedkingdom for information from U.S. Commercial Service (CS) United Kingdom, including

- **Market research**
- **Trade events**
- **Trade leads**
- **Services available to U.S. companies**
- **Contact information for CS staff members in London**
- **Info on subscribing to regular updates or connecting on social media**
- **Other information to assist U.S. exporters with United Kingdom export market development**

Upcoming Building Sector Trade Events for U.S. Exporters Interested in the United Kingdom

- **Greenbuild Expo, Manchester – November 10-11, 2015 http://greenbuildexpo.co.uk/**
- **Ecobuild – March 8-10, 2016 http://www.ecobuild.co.uk/**

Appendix 1: Countries Included in the 2017 Rankings

Countries, in alphabetical order

Afghanistan
Angola
Argentina
Australia
Austria
Bahamas
Bahrain
Bangladesh
Belgium
Bermuda
Bolivia
Brazil
Canada
Cayman Islands
Chile
China
Colombia
Costa Rica
Czech Republic
Denmark
Dominican Republic
Ecuador
Egypt
El Salvador
France
Germany
Guatemala
Haiti
Honduras
Hong Kong
Hungary
India
Indonesia
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Kazakhstan
Kenya
Korea
Kuwait
Latvia
Libya
Malaysia
Mexico
Netherlands
New Zealand
Nigeria
Norway
Oman
Pakistan
Panama
Peru
Philippines
Poland
Portugal
Qatar
Russia
Saudi Arabia
Singapore
South Africa
Spain
Sweden
Switzerland
Taiwan
Thailand
Trinidad and Tobago
Turkey
Ukraine
United Arab Emirates
United Kingdom
Venezuela
Vietnam

This Page Intentionally Left Blank

Appendix 2: 2017 Export Market Rankings for the Sector Group

Ranked in order of value of projected annual exports, highest to lowest

1. Canada
2. Mexico
3. China
4. Japan
5. Australia
6. Saudi Arabia
7. Germany
8. Hong Kong
9. Korea
10. United Kingdom
11. Brazil
12. Singapore
13. Venezuela
14. India
15. United Arab Emirates
16. Russia
17. Colombia
18. France
19. Vietnam
20. Chile
21. Taiwan
22. Turkey
23. Belgium
24. Indonesia
25. Thailand
26. Netherlands
27. Italy
28. Bahamas
29. Peru
30. South Africa
31. Panama
32. Ecuador
33. Philippines
34. Iraq
35. Malaysia
36. Trinidad and Tobago
37. Dominican Republic
38. Pakistan
39. Argentina
40. Israel
41. Qatar
42. Ukraine
43. Bolivia
44. Costa Rica
45. Egypt
46. Oman
47. Kuwait
48. New Zealand
49. Latvia
50. Ireland
51. Guatemala
52. Jamaica
53. Kenya
54. Honduras
55. Sweden
56. Denmark
57. El Salvador
58. Bangladesh
59. Switzerland
60. Austria
61. Kazakhstan
62. Angola
63. Libya
64. Norway
65. Cayman Islands
66. Nigeria
67. Afghanistan
68. Bahrain
69. Bermuda
70. Hungary
71. Poland
72. Portugal
73. Spain
74. Haiti
75. Czech Republic

This Page Intentionally Left Blank

Appendix 3: 2017 Export Market Rankings by Subsector

Ranked in order of value of projected annual exports, highest to lowest

2017 Top Markets: Heating, Ventilation, Air-Conditioning & Refrigeration (HVACR)

1. Canada
2. Mexico
3. Australia
4. China
5. Russia
6. Germany
7. Brazil
8. United Kingdom
9. Korea
10. Saudi Arabia
11. Venezuela
12. Japan
13. India
14. South Africa
15. United Arab Emirates
16. France
17. Colombia
18. Belgium
19. Chile
20. Thailand
21. Hong Kong
22. Malaysia
23. Indonesia
24. Italy
25. Iraq
26. Netherlands
27. Singapore
28. Ecuador
29. Taiwan
30. Turkey
31. Peru
32. Philippines
33. Argentina
34. Dominican Republic
35. Panama
36. Bolivia
37. Oman
38. Latvia
39. Ukraine
40. Qatar
41. Pakistan
42. Kuwait
43. Egypt
44. Nigeria
45. Kenya
46. Costa Rica
47. Ireland
48. Angola
49. Sweden
50. Vietnam
51. Israel
52. Guatemala
53. New Zealand
54. Trinidad and Tobago
55. Honduras
56. Kazakhstan
57. Bahamas
58. El Salvador
59. Denmark
60. Bangladesh
61. Switzerland
62. Austria
63. Jamaica
64. Spain
65. Bermuda
66. Norway
67. Libya
68. Poland
69. Haiti
70. Cayman Islands
71. Portugal
72. Bahrain
73. Czech Republic
74. Hungary
75. Afghanistan

2017 Top Markets: Lighting

1. Canada
2. Mexico
3. Germany
4. China
5. Russia
6. Japan
7. Netherlands
8. Australia
9. Korea
10. Saudi Arabia
11. Colombia
12. Taiwan
13. United Kingdom
14. United Arab Emirates
15. Venezuela
16. Hungary
17. Chile
18. Brazil
19. Peru
20. France
21. Italy
22. Israel
23. Panama
24. Bahamas
25. Hong Kong
26. Thailand
27. Ecuador
28. Costa Rica
29. Turkey
30. Bahrain
31. South Africa
32. Philippines
33. Austria
34. Indonesia
35. India
36. Singapore
37. Qatar
38. Dominican Republic
39. Spain
40. New Zealand
41. Honduras
42. Malaysia
43. El Salvador
44. Switzerland
45. Belgium
46. Kuwait
47. Argentina
48. Guatemala
49. Bermuda
50. Egypt
51. Bolivia
52. Sweden
53. Trinidad and Tobago
54. Ireland
55. Angola
56. Cayman Islands
57. Jamaica
58. Haiti
59. Norway
60. Oman
61. Kenya
62. Kazakhstan
63. Denmark
64. Ukraine
65. Pakistan
66. Iraq
67. Latvia
68. Czech Republic
69. Libya
70. Portugal
71. Bangladesh
72. Nigeria
73. Poland
74. Vietnam
75. Afghanistan

2017 Top Markets: Plumbing

1. Mexico
2. Canada
3. Saudi Arabia
4. Peru
5. Chile
6. Australia
7. Taiwan
8. China
9. United Kingdom
10. United Arab Emirates
11. Colombia
12. Qatar
13. South Africa
14. Japan
15. Brazil
16. Bahamas
17. Venezuela
18. Korea
19. Italy
20. Costa Rica
21. Ecuador
22. Singapore
23. Guatemala
24. Belgium
25. Panama
26. Turkey
27. Ireland
28. Iraq
29. Vietnam
30. France
31. Switzerland
32. Malaysia
33. Cayman Islands
34. Jamaica
35. Spain
36. Norway
37. Bahrain
38. Russia
39. Sweden
40. Israel
41. Kuwait
42. Thailand
43. Egypt
44. El Salvador
45. Austria
46. Trinidad and Tobago
47. Czech Republic
48. Poland
49. Indonesia
50. Germany
51. Kenya
52. New Zealand
53. Nigeria
54. Honduras
55. Bolivia
56. India
57. Kazakhstan
58. Oman
59. Bangladesh
60. Argentina
61. Angola
62. Latvia
63. Denmark
64. Ukraine
65. Bermuda
66. Haiti
67. Portugal
68. Pakistan
69. Libya
70. Hong Kong
71. Hungary
72. Afghanistan
73. Philippines
74. Dominican Republic
75. Netherlands

2017 Top Markets: Wood Products

1. China
2. Canada
3. Japan
4. Mexico
5. Vietnam
6. Korea
7. Australia
8. Turkey
9. Bahamas
10. United Kingdom
11. Trinidad and Tobago
12. Taiwan
13. India
14. Indonesia
15. Pakistan
16. Colombia
17. Chile
18. Panama
19. Thailand
20. Malaysia
21. Dominican Republic
22. Jamaica
23. Philippines
24. Ukraine
25. Germany
26. Israel
27. United Arab Emirates
28. Italy
29. Singapore
30. South Africa
31. Libya
32. Russia
33. Saudi Arabia
34. Peru
35. Venezuela
36. Bangladesh
37. Brazil
38. Guatemala
39. Portugal
40. Egypt
41. Denmark
42. Norway
43. New Zealand
44. Cayman Islands
45. Belgium
46. Netherlands
47. Ireland
48. Qatar
49. France
50. Bahrain
51. El Salvador
52. Argentina
53. Switzerland
54. Honduras
55. Austria
56. Poland
57. Oman
58. Iraq
59. Bermuda
60. Hungary
61. Kenya
62. Bolivia
63. Kuwait
64. Kazakhstan
65. Czech Republic
66. Costa Rica
67. Hong Kong
68. Ecuador
69. Latvia
70. Haiti
71. Sweden
72. Spain
73. Angola
74. Nigeria
75. Afghanistan

2017 Top Markets: Insulation

1. Canada
2. Mexico
3. United Kingdom
4. Brazil
5. China
6. Australia
7. Germany
8. Japan
9. Korea
10. Russia
11. France
12. Italy
13. New Zealand
14. Belgium
15. Saudi Arabia
16. Philippines
17. United Arab Emirates
18. Colombia
19. Netherlands
20. Turkey
21. Hong Kong
22. Chile
23. Peru
24. Bahamas
25. Ecuador
26. Panama
27. Indonesia
28. India
29. Taiwan
30. Thailand
31. Malaysia
32. Costa Rica
33. Dominican Republic
34. Argentina
35. Denmark
36. Israel
37. Trinidad and Tobago
38. Poland
39. Czech Republic
40. Nigeria
41. Vietnam
42. Latvia
43. Oman
44. Honduras
45. Iraq
46. Austria
47. Bahrain
48. Cayman Islands
49. Hungary
50. El Salvador
51. Haiti
52. Switzerland
53. Jamaica
54. Bermuda
55. Venezuela
56. Bolivia
57. Pakistan
58. Kuwait
59. Kenya
60. Guatemala
61. Norway
62. Kazakhstan
63. Libya
64. Bangladesh
65. Sweden
66. Qatar
67. Ukraine
68. Afghanistan
69. Portugal
70. Spain
71. South Africa
72. Egypt
73. Singapore
74. Ireland
75. Angola

2017 Top Markets: Doors and Windows

1. Canada
2. Mexico
3. Bahamas
4. Hong Kong
5. China
6. Japan
7. United Arab Emirates
8. Germany
9. Korea
10. Qatar
11. Australia
12. France
13. Dominican Republic
14. Russia
15. Costa Rica
16. Chile
17. Cayman Islands
18. United Kingdom
19. Israel
20. Norway
21. Netherlands
22. Jamaica
23. Trinidad and Tobago
24. Venezuela
25. Brazil
26. India
27. Peru
28. Saudi Arabia
29. Philippines
30. Turkey
31. Colombia
32. Singapore
33. Ireland
34. Egypt
35. Argentina
36. Taiwan
37. Poland
38. Sweden
39. New Zealand
40. Iraq
41. Afghanistan
42. Italy
43. Bahrain
44. Nigeria
45. El Salvador
46. Honduras
47. Bermuda
48. Spain
49. Switzerland
50. Haiti
51. Panama
52. Guatemala
53. Bangladesh
54. Oman
55. Indonesia
56. Denmark
57. Kuwait
58. Belgium
59. Libya
60. Czech Republic
61. Hungary
62. South Africa
63. Bolivia
64. Vietnam
65. Angola
66. Kazakhstan
67. Austria
68. Portugal
69. Ukraine
70. Kenya
71. Malaysia
72. Latvia
73. Thailand
74. Pakistan
75. Ecuador

2017 Top Markets: Glass

1. Hong Kong
2. Canada
3. Mexico
4. Japan
5. Brazil
6. Colombia
7. Ecuador
8. Germany
9. Turkey
10. Qatar
11. Argentina
12. Singapore
13. South Africa
14. India
15. Poland
16. Switzerland
17. Egypt
18. Latvia
19. Jamaica
20. Kuwait
21. Australia
22. Vietnam
23. Israel
24. Indonesia
25. Pakistan
26. Honduras
27. Bahamas
28. Oman
29. Philippines
30. Bangladesh
31. Denmark
32. Guatemala
33. Trinidad and Tobago
34. Korea
35. Austria
36. Czech Republic
37. El Salvador
38. Nigeria
39. Kazakhstan
40. Angola
41. Kenya
42. Haiti
43. Norway
44. Ukraine
45. Libya
46. Bermuda
47. Ireland
48. Iraq
49. Dominican Republic
50. New Zealand
51. Panama
52. Portugal
53. Venezuela
54. Costa Rica
55. Hungary
56. Afghanistan
57. Russia
58. France
59. Bolivia
60. Cayman Islands
61. Netherlands
62. Chile
63. Bahrain
64. Peru
65. Taiwan
66. Belgium
67. United Kingdom
68. Thailand
69. Italy
70. China
71. Sweden
72. Spain
73. Saudi Arabia
74. United Arab Emirates
75. Malaysia

This Page Intentionally Left Blank

Appendix 4: Data Concordance: List of Harmonized Tariff Schedule Codes Used to Define the Sub-sectors

Data Concordance: Heating, Ventilation, Air-Conditioning & Refrigeration (HVACR)

HTS Codes	
732211	RADIATORS FOR CENTRL HTNG AND PARTS, CAST IRON
732219	RADIATORS FOR CNTRL HTNG AND PARTS, IOS EXC CSTIRN
732290	AIR HTRS A HOT AIR DIST NT ELEC HTD WFAN, PRTS IOS
840310	CENTRAL HEATING BOILERS
840390	PARTS FOR CENTRAL HEATING BOILERS
840410	AUX PLANT FOR USE WITH BOILERS
840420	AUX PLANT, CONDENSERS FOR STEAM OR VAPOR POWER UNITS
840490	AUX PLANT, PARTS
841430	COMPRESSORS USED IN REFRIGERATING EQUIPMENT
841451	TABLE, FLOOR ETC FANS ELECTRIC NOT EXCEED 125 W
841459	FANS, NESOI
841480	AIR/GAS PUMPS, COMPRESSORS AND FANS ETC, NESOI
841490	AIR/GAS PUMP, COMPRESSOR AND FAN ETC PARTS, NESOI
841510	AIR CONDITION MACH, WINDOW/ WALL TYPE, SELF CONT
841581	AIR CONDITIONING MACH ETC INCL REFRIG UNIT ETC
841582	AIR CONDITIONING MACH ETC INCORP REFRIG UNIT NESOI
841583	AIR CONDITIONING MACHINES ETC NOT INCL REFRIG UNIT
841590	PARTS, NESOI, OF AIR CONDITIONING MACHINES
841610	FURNACE BURNERS FOR LIQUID FUEL
841620	FURNACE BURNERS FOR PULVERIZED SOLID FUEL/GAS ETC
841630	MECH STOKERS, GRATES, ASH DSCHRGER & SIM APPLIANCS
841690	PARTS OF FURNACE BURNERS
841861	COMPRES TYPE HEAT PUMP UNIT W HEAT EX NESOI
841869	REFRIGERATING/FREEZING EQUIPMENT, NESOI
841899	REFRIGERATOR FREEZER AND HEAT PUMP PARTS NESOI
841911	INSTANTANEOUS GAS WATER HEATERS
841919	INSTANT/STORAGE WATER HEATRS EX INSTANT GAS WTR NE
841981	MACHINERY ETC FOR MAKING HOT DRINKS COOKING HEATNG
841990	PARTS FOR MACHINERY PLANT OR LAB EQUIPMENT ETC
842112	CLOTHES-DRYERS, CENTRIFUGAL
842129	FILTER/PURIFY MACHINE & APPARATUS FOR LIQUID NESOI
842191	PARTS OF CENTRIFUGES, INCLUDING CENTRIFUGAL DRYERS
847960	EVAPORATIVE AIR COOLERS
903210	THERMOSTATS
903220	MANOSTATS
903289	AUTO REGULATING INS & APPR EX THROSTAT,MNSTAT, ETC
903290	PTS, AUTOM REGULATING/CONTROLLING INST & APPRTS

Data Concordance: Lighting

HTS Codes	
701110	GLASS ENVELOPES (INCLUDING BULBS AND TUBES), OPEN, AND GLASS PARTS THEREOF, WITHOUT FITTINGS, FOR ELECTRIC LIGHTING
853910	SEALED BEAM ELECTRIC LAMP UNITS
853921	TUNGSTEN HALOGEN ELECTRIC FILAMENT LAMPS
853922	FILAMENT LAMP POWER NOV 200 W & VOLTAGE OVER 100 V
853929	FILAMENT LAMPS EX ULTRAVIOLET/INFRARED LAMPS NESOI

853931	DISCHARGE LAMPS, (EX ULTRAVIOLET), FLUORESCENT
853932	MERCURY OR SODIUM VAPOR LAMPS; METAL HALIDE LAMPS
853939	DISCHARGE LAMPS EX ULTRVILT FLURSCNT HT CTHDE LAMP
853940	ULTRAVIOLET OR INFRARED LAMPS; ARC LAMPS
853941	ARC LAMPS
853949	ULTRAVIOLET OR INFRARED LAMPS
853990	PARTS FOR ELECT FILAMENT, DISCHARGE OR ARC LAMPS
854610	ELECTRICAL INSULATORS OF GLASS
854620	ELECTRICAL INSULATORS OF CERAMICS
854690	ELECTRICAL INSULATORS, NESOI
854710	INSULATING FITTINGS OF CERAMICS FOR ELECTRICAL MCH
854720	INSULATING FITTINGS FOR MACHINES MADE OF PLASTIC
854790	INSLT FIT EX CERAM/PLAS;ELEC COND TB/JNT,BMTL ETC
940510	CHANDELIER CEILNG/WALL LGHTNG FTTNG EX PUBLIC LGHT
940540	OTHER ELECTRIC LAMPS AND LIGHT FITTINGS
940560	ILLUMINATED SIGNS
940591	PARTS, OF GLASS
940592	PARTS, OF PLASTIC
940599	PARTS, OF OTHER

Data Concordance: Plumbing

HTS Codes	
391721	TUBES, PIPES & HOSES, RIGID OF POLYMRS OF ETHYLENE
391723	TUBES, PIPES & HOSES, RIGID, POLYMR VINYL CHLORIDE
391220	LAVATORY SEATS AND COVERS
392210	BATHS, SHOWER BATHS,SINKS & WASHBASINS, OF PLASTIC
392290	BIDETS, LAVATORY PANS, SIMILR SANIT WARE, PLASTIC
691010	CERAMIC SANITARY FIXTURES OF PORCELAIN OR CHINA
691090	CERAMIC SANITARY FIXTURES OTH THN OF PORCLN/CHINA
732410	SINKS AND WASH BASINS OF STAINLESS STEEL
732421	CAST IRON BATHS ENAMELED OR NOT
732429	BATHS OF IRON OR STEEL, OTHER THAN CAST IRON
732490	OTHER SANITARY WARE, INCLUDING PARTS, IRN/ST NESOI
741110	TUBES & PIPES OF REFINED COPPER
741121	TUBES & PIPES; OF BRASS (COPPER ALLOY)
741122	TUBES A PIPS OF CUPRO-NIKL OR NICKEL-SILVER
741129	TUBES & PIPES, OF COPPER ALLOYS NESOI
741210	FITTINGS, PIPE AND TUBE OF REFINED COPPER
741220	COPPER ALLOY TUBE OR PIPE FITTINGS
741820	SANITARY WARE AND PARTS THEREOF, OF COPPER
741991	ARTICLES OF COPPER NESOI, CAST, MOLDED ETC
741999	ARTICLES OF COPPER NESOI

Data Concordance: Wood

HTS Codes	
440121	WOOD IN CHIPS OR PARTICLES, CONIFEROUS
440122	WOOD IN CHIPS OR PARTICLES, NONCONIFEROUS
440310	WOOD IN THE ROUGH, TREATED PAINT ETC PRESERVATIVES
440320	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK, OR ROUGHLY SQUARED
440391	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK, OR ROUGHLY SQUARED
440392	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK, OR

	ROUGHLY SQUARED
	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK, OR
440399	ROUGHLY SQUARED
440610	RAILWAY, TRAMWAY SLEEPERS, WOOD, NOT IMPREGNATED
440690	RAILWAY/TRAMWAY SLEEPERS (CROSS-TIES), WOOD, NESOI
440710	CONIFEROUS WOOD SAWN, SLICED ETC, OVER 6 MM THICK
440721	MAHOGANY, SAWN/CHIPPED LENGTHWISE, SLICED/PEELED
440722	VIROLA, IMBUIA & BALSA SAWN/CHIPPD LNWS, SLICD/PLD
440723	BABOEN/MOHOGANY/IMBUIA/BALSA WOOD SAWN OR CHIP ETC
440724	VIROLA/MOHOGANY/IMBUIA/BALSA WOOD SAWN OR CHIP ETC
440725	DARK/LIGHT RED MERANTI & MERANTI BAKAU ETC, LUMBER
440726	WHITE LAUAN/MERANTI/SERAYA, YELLOW MERANTI & ALAN
440727	SAPELLI, SAWN/CHIPPED LENGTHWISE, SLICED/PEELED
440728	IROKO SAWN OR CHIPPED LENGTHWISE, SLICED OR PEELED
440729	OTHER TROPICAL WOOD,WOOD SAWN/CHIPPED LNGTHWSE ETC
440791	OAK WOOD, SAWN, SLICED ETC, OVER 6 MM THICK
440792	BEECH WOOD, SAWN, SLICED ETC, OVER 6 MM THICK
440793	MAPLE SAWN OR CHIPPED LENGTHWISE, SLICED OR PEELED
440794	CHERRY, SAWN/CHIPPED LENGTHWISE, SLICED/PEELED
440795	ASH, SAWN OR CHIPPED LENGTHWISE, SLICED OR PEELED
440799	NONCONIFEROUS WOOD NESOI, SAWN, SLICED ETC, OV 6MM
440810	VENEER SHEET ETC, NOT OVER 6MM THICK, CONIFEROUS
440820	VEN/PLYWD SHEET SAW LNGTHWS NOV6MM, TROPICAL WOODS
440831	VEN/PLYWD SHEET SAW LNGTHWS NOV6MM, TROPICAL WOODS
440839	OTHER TROPICAL WOOD NESOI VEN/PLYWD SHT NOV6MM ETC
440890	VENEER SHEET ETC, NOT OV 6MM, NONCONIFEROUS NESOI
440910	WOOD, TONGUED, GROOVED, MOLDED ETC, CONIFEROUS
440920	WOOD, TONGUED, GROOVED, MOLDED ETC, NONCONIFEROUS
440921	BAMBOO CONT. SHAPED ALONG ANY EDGES, ENDS OR FACES
440929	NONCON WD EXC BAMBOO CONT SHPD ALNG EDGES ENDS ETC
441010	PARTICLE BOARD AND SIMILAR BOARD OF WOOD
441011	PARTICLE BOARD, OF WOOD
441012	ORIENTED STRAND BOARD (OSB), OF WOOD
441019	WAFERBOARD AND SIMILAR BOARD, OF WOOD, NESOI
441021	ORIENTED STRAND/WAFERBRD OF WOOD, UNWORKED/SANDED
441029	ORIENTED STAND BOARD & WAFERBOARD, OF WOOD, NESOI
441031	PART&SIM BRD OF WOOD,UNWORK/NT FUTH WRK THN SANDE
441032	PART&SIM BRD OF WOOD,SURF CVD W/MELAMINE IMRG PPR
441033	PART&SIM BRD OF WOOD,SURF CVD W/ DEC. PLAST LAMIN
441039	PARTICLE & SIMILAR BOARD OF WOOD, NESOI
441090	PARTICLE, SIMILAR BOARD OF LIGNEOUS MAT'L NESOI
441111	FIBERBD LIGNEOUS OV.8G/CM3 NOT MECHANICALLY WORKED
441112	MEDIUM DENSITY FIBERBOARD, OF A THICKNESS LT=5MM
441113	MEDIUM DENSITY FIBERBOARD, THICKNESS GT 5MM LT=9MM
441114	MEDIUM DENSITY FIBERBOARD, OF A THICKNESS GT 9 MM
441119	FIBERBRD WOOD/LIGNEOUS MAT'L DENSTY >.8G/CM3 NESOI
441121	FIBERBD LIGNEOUS OV .5 NOV .8G/CM3 NT MECHANICL WK
441129	FIBERBOARD WD/LIGNEOUS DENSTY .5 -.8 G/CM3, NESOI
441131	FIBERBD LIGNEOUS OV.35/NOV.5G/CM3 NT SURFACE COVER
441139	FIBERBOARD LIGNEOUS MAT'LS OV.35/NOV.5G/CM3 NESOI
441191	FIBERBD LIGNEOUS, NOV35G/CM3, NOT MECH WK OR S COV
441192	FIBERBOARD, OF A DENSITY EXCEEDING 0.8 G/CM3 NESOI
441193	FIBERBOARD, DENSITY GT 0.5G/CM3, LT=0.8G/CM3 NESOI
441194	FIBERBOARD, OF A DENSITY LT=5 G/CM3, NESOI
441199	FIBERBOARD, LIGNEOUS, NOV 35 B/CM3, NESOI
441210	PLYWOOD, VENEERED PNLS & SIM. LAMINATED, OF BAMBOO

441211	PLYWOOD, PLY NOC 6MM, AT LEAST ONE PLY TROPIC WOOD
441212	PLYWOOD, PLY NOV6MM OF WOOD SHEETS, NONCONIF NESOI
441213	PLYWOOD AT LEAST ONE OUTER PLY TROPICAL WOOD
441214	PLYWOOD,AT LEAST ONE OUTER PLY NONCONIFEROUS,NESOI
441219	PLYWOOD, PLY NOV6MM, BOTH OUTER PLIES CONIFEROUS
441221	PLY NESOI, VEN PAN ETC 1 OUT PLY HDWD 1 LAY PARTCL
441222	VENEER PANEL,ETC,OUTER NONCON,1 PLY TROPICAL,NESOI
441223	VENEER PANEL/ETC 1 LAYR PARTICLE BOARD, NESOI
441229	PLY NESOI, VEN PAN ETC 1 OUTER PLY HRDWOOD NESOI
441231	PLYWOOD EXC BAMBOO, EA PLY LT=6MM THK, TROPIC WOOD
441232	PLYWOOD EXC BAMBOO LT=6 MM THK NONCONIFEROUS NESOI
441239	PLYWOOD, EXC BAMBOO, LT=6 MM THK, CONIFEROUS NESOI
441291	PLY VEN PANL ETC, NESOI, AT LEAST 1 LAY PARTIC BD
441292	VENERRED PANELS,ETC.,AT LEAST 1 PLY TROPICAL,NESOI
441293	PLYWD, VEN PANELS, LAMNATD WD ONE PARTCLE BD NESOI
441294	BLOCKBOARD, LAMINBOARD AND BATTENBOARD, EXC BAMBOO
441299	PLYWOOD, VENEER PANELS & SIMILAR LAM WOOD, NESOI
441300	DENSIFIED WD BLOCKS/PLATES/STRIPS/PROFILE SHAPES
441830	PARQUET PANELS, OF WOOD
441840	FORMWORK (SHUTTERING) FOR CONCRETE CONSTRUCTN WOOD
441850	SHINGLES AND SHAKES OF WOOD
441860	BUILDERS' POSTS AND BEAMS, OF WOOD
441871	ASSEMBLED FLOORING PANELS OF WOOD, MOSAIC FLOORS
441872	ASSEMBLED FLOORING PANELS OF WOOD MULTILAYER NESOI
441879	ASSEMBLED FLOORING PANELS, OF WOOD, NESOI
441890	BUILDERS JOINERY AND CARPENTRY OF WOOD, NESOI
442190	ARTICLES OF WOOD, NESOI
940340	WOODEN KITCHEN FURNITURE, EXCEPT SEATS
940600	PREFABRICATED BUILDINGS

Data Concordance: Insulation

HTS Codes

680610	SLAG WOOL, ROCK WOOL ETC, IN BULK, SHEETS OR ROLLS
680690	MXTRS A ARTCLS OF HEAT OR SOUND ABS O INS NESOI
701939	GLASS NONWOVEN MATTRESSES, BOARDS ETC NESOI
701990	GLASS FIBERS & ARTICLES THEREOF NESOI

Data Concordance: Doors and Windows

HTS Codes

441810	WINDOWS, FRENCH-WINDOWS AND THEIR FRAMES, OF WOOD
441820	DOORS AND THEIR FRAMES AND THRESHOLDS, OF WOOD
730830	DRS, WNDWS A FRMS A THRSHLDS FR DRS, IRON OR STEEL
761010	ALU DOR WIN AND THEIR FRA AND THRES FOR DOORS
392520	DOORS, WINDOWS, THEIR FRAME AND THRESHOLDS (VYNIL, FIBERGLASS INCLUDED)
392530	SHUTTERS, BLINDS

Data Concordance: Glass

HTS Codes	
700311	NONWIRED SHEETS OF CAST/RLD GLASS, BODY TINTD ETC
700312	NONWRD SHTS CAST/RLD GLASS, COLRD,OPAC,FLSHD,LAYRD
700319	CAST OR ROLLED GLASS IN NONWIRED SHEETS, NESOI
700320	WIRED SHEETS OF CAST OR ROLLED GLASS, UNWORKED
700330	PROFILES OF CAST OR ROLLED GLASS, UNWORKED
700410	DRW/BLWN GLSS SHTS CLR OPC FLSH ABSRB/RFLCTV LAYER
700420	DRW/BLWN GLASS SHEETS COLORD OPAC FLASH SPEC LAYER
700490	DRWN/BLWN GLSS SHTS W/WO ABSRB/RFCT LYR N OTH WRKD
700510	FLOAT GLASS ETC IN NONWRD SHTS W ABS/REFL LAYER
700521	NONWIRED GLSS CLRD OPC FLSHD OR SRFC GRND N AB/RF LY
700529	NONWIRED GLASS NESOI IN SHEETS
700530	FLOAT GLS ETC, WIRED SHTS, W OR WO ABSB LAYER UNWK
700729	LAMINATED SAFETY GLASS, NOT FOR VEHICULAR USE
700800	MULTIPLE-WALLED INSULATING UNITS OF GLASS

This Page Intentionally Left Blank

Appendix 5: Citations

[i] *Global Construction 2020*, Oxford Economics and Global Construction Perspective
[ii] *World Green Building Trends SmartMarket Report*, McGraw Hill Construction (2013)
[iii] UN National Accounts Database, Value Added by Economic Activity (Construction) at Current Prices, U.S. Dollars. Data for the period 2009-2012 utilized to create a linear projection through 2017
[iv] UN HS Merchandise Trade data for world imports from world less U.S. imports from world, with data for 2010-2013 utilized to develop a 3-year compound annual growth rate (CAGR) percentage
[v] UN HS Merchandise Trade data for world imports from U.S. is used in this section as a proxy for U.S. exports. Data for 2010-2013 is utilized to develop a 3-year CAGR percentage
[vi] "Assessment of Lawful Harvesting and Sustainability of U.S. Hardwood Exports," prepared for American Hardwood Export Council (October 1, 2008)
[vii] UN National Accounts Database, Value Added by Economic Activity (Construction) at Current Prices, U.S. Dollars. Data for the period 2009-2012 utilized to create a linear projection through 2017
[viii] *World Green Building Trends*, McGraw Hill Construction
[ix] *Green Building Policies in Australia* , Presentation, (April 2013), Department of Resources, Energy and Tourism, Australia.
[x] *World Green Building Trends, SmartMarket Report*, McGraw-Hill Construction (2013) referencing statements made by the Canada Green Building Council.
[xi] *Canada Green Building Trends*, McGraw Hill Construction (2014), cites a survey conducted by McGraw Hill for the Canada Green Building Council during the March-April 2014 period.
[xii] Source: UN National Accounts Database, based on actual data for the 2009-2012 period carried forward using a linear trend projection through 2017.
[xiii] UN National Accounts Database, Value Added by Economic Activity (Construction) at Current Prices, U.S. Dollars. Data for the period 2009-2012 utilized to create a linear projection through 2017
[xiv] SmartMarket Report, Global Green Building Trends, McGraw-Hill Construction
[xv] UN National Accounts Database, data for 2009-2012 carried forward using a linear trend to 2017
[xvi] UN National Accounts database, data for 2009-2012 carried forward using a linear trend to 2017
[xvii] UN National Accounts database, data for 2009-2012 carried forward using a linear trend to 2017
[xviii] UN National Accounts database, data for 2009-2012 carried forward using a linear trend to 2017
[xix] UN National Accounts database, data for 2009-2012 carried forward using a linear trend to 2017
[xx] Government of Japan estimate projection conducted in 2012
[xxi] American Softwood Export Council, Japan
[xxii] *Promotion of Green Housing and Building in Japan – Standards, Voluntary Measures and Other Incentives, p*resentation by Building Research Institute of Japan on behalf of the Ministry of Land, Infrastructure, Transport and Tourism, at APEC Workshop on Sharing Experiences in the Design and Implementation of Green Building Codes, Lima, Peru (March 2013)
[xxiii] Based on a linear growth projection to 2017 that references UN National Accounts data for construction activity during 2009-2012.
[xxiv] World Green Building Trends, SmartMarket Report, McGraw Hill Construction

Industry & Analysis' (I&A) staff of industry, trade and economic analysts devise and implement international trade, investment, and export promotion strategies that strengthen the global competitiveness of U.S. industries. These initiatives unlock export, and investment opportunities for U.S. businesses by combining in-depth quantitative and qualitative analysis with ITA's industry relationships.

For more information, visit
www.trade.gov/industry

I&A is part of the International Trade Administration, Whose mission is to create prosperity by strengthening the competitiveness of U.S. industry, promoting trade and investment, and ensuring fair trade and compliance with trade laws and agreements.

INTERNATIONAL
TRADE
ADMINISTRATION